

Neponset River Watershed Association

Community Assessment

Part of the Water BUDGETS Project

Balancing **U**ses and **D**emands to **G**enerate **E**ffective
Techniques for **S**ustainability

June, 2003

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Community Assessment

**Part of the Neponset River Watershed Association's Water BUDGETS Project; Balancing
Uses and Demands to Generate Effective Techniques for Sustainability**

Phase I: Interviews With Municipal Officials

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By:

Jennifer Rodstrom

Communications Director

Neponset River Watershed Association

Phase II: Public Opinion Survey

June 2003

By:

Jessica Stephens

Water Resource Analyst

Neponset River Watershed Association

With Assistance from:

Applied Marketing Science, Inc.

303 Wyman Street

Waltham, MA 02451

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For additional copies of this document or for more information, please contact:

**Neponset River Watershed Association
490 Chapman Street, Suite 1B
Canton, MA 02021
781-575-0354
staff@neponset.org**

Executive Summary

The Neponset River Watershed Association (NepRWA) launched its Water BUDGETS Program in 1998 to study declining water levels in local streams and how this problem impacts drinking water supplies, wildlife and recreation. To this end, nearly 100 NepRWA volunteers worked closely with NepRWA staff to collect and analyze data on precipitation, evaporation, stream levels, river habitats, resident fish and aquatic insects. This data will, for the first time, provide a picture of the interrelationships between drinking water, wastewater, and river water.

Data collection, however, is only a first step towards developing realistic strategies for sustainable water management. This data also needs to be conveyed in a meaningful manner to local government and residents. In order to gain a better understanding of these constituencies' current knowledge and attitudes, NepRWA initiated a Community Assessment that includes one-on-one interviews with key municipal officials, as well as a public opinion survey within the three communities in the study area.

The Community Assessment was conducted in order to determine if communities, town governments and residents have an understanding of the issues related to stream flow, aquatic habitat, and water use within the Neponset River Watershed. The decision to study human attitudes towards water-related issues within these communities was based largely on the fact that any recommendations put forth to protect the biological health and water resources within the watershed would need to be well received by the local audience in order to be effective. Therefore, NepRWA concluded that the most effective way to assess the potential audience for water conservation initiatives that exists within the watershed, would be to conduct a multi-phased survey of local residents and key decision-makers within the BUDGETS study area of Canton, Stoughton, and Sharon.

The first phase of the Community Assessment focused on interviews with local municipal officials. This phase of the project was completed in August 2000, and yielded important information on the attitudes, knowledge, and opinions of a range of municipal officials in the BUDGETS study area.

The second phase of the Community Assessment was completed in June of 2003, and concentrated on the opinions and knowledge base of the residential segment of the study area. This information was obtained through a public opinion survey. Based on the outcome of the interviews with the municipal officials and the results of the public opinion survey, NepRWA hopes to offer recommendations to the BUDGETS communities that will bring about watershed protection and water conservation.

The results of each phase of the Community Assessment are included in the following discussion

Community Assessment Phase I

Interviews with Local Municipal Officials: Perspectives on Environment, Streams and Water Resource Management

Background

The Community Assessment was conducted as part of a larger effort to understand and diagnose key water-use issues within the Neponset River Watershed. Scientific data was collected that would serve as the necessary evidence to prove that the Neponset River and its tributaries are being placed under great stress as local communities continue their efforts to meet the growing demand for water.

However, collecting data is only a first step towards developing realistic strategies for sustainable water management. NepRWA's ultimate goal for the Neponset River is to avoid the fate of the Ipswich River, which regularly runs dry and is facing costly state- and federal-imposed remediation. At the foundation of this project is an understanding by NepRWA that the real issue in this debate about how to best manage water for all purposes, is the great array of attitudes, and at times significantly differing opinions, towards water related issues within these communities. Any recommendations by NepRWA as to how best protect the biological health and water resources within the watershed would need to be accepted by the local audience and incorporated into the daily use of water in order to be effective.

To serve as an effective partner to communities in achieving this goal, NepRWA needs to better understand water resource management challenges and opportunities from the perspective of municipal officials, boards and agencies. With the generous cooperation of local municipal officials in the towns of Canton, Sharon, and Stoughton, NepRWA conducted and analyzed anonymous one-on-one interviews with the very people involved in making important decisions affecting water resources within the Neponset Valley. These interviews represent an important first step in that direction.

The first phase of the Community Assessment, the municipal interviews, occurred in the spring of 2000. This report is the culmination of that first phase.

Methodology

This portion of the report is an analysis of nine one-on-one interviews conducted in the towns of Canton, Sharon and Stoughton between February and April 2000. The sample size is small due to time and financial constraints. The interviews were with:

- 1 Selectman
- 2 Department of Public Works (DPW) Directors
- 2 Planning Board Members
- 2 Town Managers
- 1 Conservation Agent
- 1 Zoning Board of Appeals (ZBA) Member

The stated goals of this first phase of the Community Assessment are the following:

- To gain an understanding of municipal officials' knowledge and attitudes relating to the relationship of water supply, wastewater, and the river
- To identify the appropriate language for communicating a holistic watershed approach (in order to stimulate positive community involvement in protecting instream flows and aquatic biodiversity)
- To engage municipal officials in the discussion of streamflow issues

In order to meet these goals, the interviews would seek to answer the following questions:

- What are the critical environmental issues in each community?
- What are general attitudes and knowledge of the term watershed?
- What is the level of understanding of streamflow/river issues?
- What is the level of understanding of water supply and wastewater management issues and their connection to rivers and streams?

Statement of Limitations

This phase of the project is qualitative in nature and does not yield statistical information that can be extrapolated across an entire population. The sample chosen for the interviews was not random; NepRWA interviewed specific individuals from specific communities.

Nevertheless, while this data is not a representative sample, it does yield important information about the attitudes, knowledge, and opinions of a range of municipal officials in the BUDGETS study area, namely the communities of Canton, Stoughton, and Sharon.

One of the findings of this study is that there is no way to clearly define "municipal officials" or "municipal boards." Knowledge, opinions, and attitudes varied widely within each town and among the same positions in different towns (i.e. DPW Directors, Town Managers). Additionally, because the sample size was small, it did not allow for interviewing multiple

members of the same board. It is anticipated, from the interviewees' responses, that answers might vary widely from board member to board member.

Critical Environmental Issues

- Every decision-maker interviewed identified water-related concerns as a major environmental issue in his town, particularly related to human-use as opposed to the Neponset River or specific streams.

Water concerns varied widely from broad to very specific: water supply, recharge, sewers, groundwater contamination, water quality and runoff, water quality in private wells, wetlands and development, and Title V.

Various town officials discussed how their communities' geography was a factor in water supply or water quality issues.

In *Canton*, one official talked about drainage problems. "Everything in Canton is on top of a hill or beside a hill." He stated that Canton's water supply is on the down slope of the most urbanized parts of town, which degrades surface water quality and ultimately impacts groundwater.

Several *Stoughton* officials commented that their community is located at the "top" of several watersheds or on a "knob of land," and that water flowed out of their town. They recognized this as one of the causes of the town's chronic water supply problems.

In *Sharon*, town officials recognized that their town is at the headwaters of the Neponset, as well as the Taunton and Canoe River Watersheds.

Each town also had its own environmental concerns and level of environmental consciousness, which varied dramatically from town to town.

Canton

The officials interviewed in Canton had varying views on the environment. One official did not like the question about environmental issues because he felt that it really asked, "What is being damaged,?" and had a very negative connotation.

Water issues were brought up in a variety of ways. One official mentioned several water-related issues that concern him – locating effluent producers along streams, sewer expansion vs. septic, roof water recharge, Superfund sites, and "assuring our own [water] supply as much as possible."

Two officials also talked about wetlands and drainage/sewer issues. One official commented on the development of the Neponset River's floodplain by stating, "Where we want our water quality to be at its best, it's at its worst."

Another official discussed water, sewer, and open space issues in terms of citizens' "rights." He believes that citizens have "rights, as well as everyone else, for that [local] water supply." He also feels that citizens have been paying into Massachusetts Water Resource Authority's Deer Island wastewater treatment plant for decades and that it is unfair to now tell these people they

cannot get on the system. Finally, he stated that while some folks might say that there are areas that should not be developed, this is unfair to the property owner. “They own the land; they have the right to develop it, to use it.”

Sharon

Sharon officials consider their citizenry to be very enlightened and concerned about the environment. Decades ago the town made a conscious decision to minimize development and to remain a mainly residential community dependent almost entirely on septic systems. Open space protection and careful planning for new development are key, and the Conservation Commission is perceived to be very active.

As far as particular resources, Lake Massapoag is the centerpiece of the town, and each year there are discussions on how to best manage the pond, in a scenario described as “draw down vs. no draw down.” A Planning Board member also discussed “home-based” water problems, such as Title V regulations. He also stated that wetland protection is a big issue, even for the planning board, because wetlands are coming into play with more developments. The other big issue for Sharon is lawn-watering, which is being addressed through public education and bylaw changes.

Stoughton

Stoughton’s most pressing problem is its need for additional water supply. All discussions with municipal officials came back to this issue.

Groundwater Contamination

Adding to Stoughton’s water woes are the ongoing problems with groundwater contamination resulting from local industry. While the Department of Environmental Protection, the responsible businesses, and the town are working to remediate these problems, it has been a difficult process.

Cedar Swamp

As far as the denial of the Cedar Swamp well, one official characterized the decision as ridiculous, stating that it, “puts streams and mosquitoes and bifocal bluefish higher than human beings.” Others felt that the town was so focused on finding a cheap, local water supply that officials did not want to look at all the options. Instead, they focused solely on the Cedar Swamp site until the option was denied, and only now are they starting to seriously consider MWRA or the proposed Bluestone desalinization plant.

Because Stoughton’s municipal water supply is perceived to be so scarce, all new developments are required to have their own private wells. The proliferation of private wells is particularly distressing to the municipal officials because these wells do not have protected zones. They also are not regularly monitored for quality or quantity unlike municipal wells. One of the major reasons the town wants to increase its water supply is to get residents with private wells onto the municipal system.

“We’re only Stoughton”

Several officials perceive the town with a “We’re only Stoughton” attitude, or a sense that there is neither the money in a “working class town” for environmental concerns, nor sustained

interest. As one official put it, “Try getting a working class town to understand that they need to conserve water, yet prices keep going up.”

Only one official felt this was a “bogus statement” and that some decision-makers purposely take this attitude because it devalues property and provides more incentive for business interests to get the upper hand. He feels that Stoughton is a good community, and a working class town has just as much interest in raising its children in a good environment as any other community, and perhaps citizens would develop a different ethic if these issues were talked about more openly in town.

Open Space

Finally, interest in open space protection is growing in Stoughton, as was shown by Town Meeting approval of an Open Space Plan and the formation of an Open Space Committee. While the policy might be in place, however, there is no plan for funding open space purchases. One official referenced the Community Preservation Act by stating, “there is no big push here for the legislation that would defer some real estate revenue,” and that there is not too much real (i.e. financial) support for the plan.

Community Response to Environment

- While officials from each town generally tended to be in agreement on specific environmental issues that their towns face, there were divergent views on how town government responded to these issues.

In fact, with the exception of Sharon’s officials, each individual seemed to have a different opinion. One sentiment echoed by several officials, however, was a lack of technical expertise for dealing with problems like growth, water-use and specific environmental bylaws.

Canton

Opinions varied in Canton. One official felt that the town was slow in reacting to issues. Towns like Canton did not plan properly, and they are now having an “after-the-fact-reaction.” He discussed how smaller South Shore towns did not have town planners, and that now there is a very distinct need for them. He feels that many towns do not want to “hire an outsider to tell us what’s best for our town,” but he also feels that type of expertise is necessary.

A member of the Planning Board discussed the lack of communication between the various committees and commissions. As he put it, “they’re not all on the same page.” He specifically referenced the town’s Groundwater Protection District Bylaw, and how it is not being fully implemented because there is no one person in command of it. While various town entities from the Fire Department to the Board of Health to the Zoning Board of Appeals have roles to play, “none of them [has] a sense of how this thing is supposed to work.”

A third town official discussed the town’s efforts to be more of a “service organization.” He is one member of a group putting together a “strategic direction” for the town, in terms of key issues such as traffic, land, and schools. He interviewed local residents as part of this process. His sense from these interviews is that environment is not high on the list of concerns (i.e. water

and sewer), but the biggest concerns were traffic and growth, particularly a sense that growth was out of control. His said that people felt the quality of life had changed and they “want it to be like it was in the ‘50’s,” when the reality is that most suburban towns are facing urban sprawl issues.

Two of the officials had sharp criticism for the Environmental Protection Agency (EPA). Official “A” stated that, “EPA is unrealistic in all that they do.” He went on to say that EPA’s methodology for testing is “100 years ahead of our technology,” and that “the technology is not there to meet their laws” and no one is designing it. In conclusion, he stated that “regulatory agencies don’t make friends,” and that “privatization is the way to go; working for a dollar always makes things work.”

Similarly, Official “B” discussed how EPA’s new laws on illegal connections add an additional burden on towns. He feels these new laws are trying to make the MWRA responsible for the collection system, and that EPA is trying to make the MWRA a regulatory body, which is not its role. EPA wants MWRA to be responsible for “enforcement,” which would not only change the relationships between the towns and MWRA; it would also change MWRA into something it does not want to be.

Sharon

The officials from Sharon seemed to be in agreement that, “Sharon is doing a reasonably good job of dealing with the issues.” One official felt that town officials and boards have a good understanding of “the significance of the downstream network, the series of ponds and Massapoag Brook.”

A Planning Board member discussed a major zoning bylaw change before the town that would require homeowners to maintain 40-50% of their lot in a “natural vegetative state.” That area could not be lawn, nor could it have an automatic sprinkler. He also talked about town efforts to increase the cost of water if a water-user consumes more than a certain number of gallons. The problem he saw, however, was that currently water bills are on a six-month cycle, so people would not really see or feel the cost increase. A quarterly billing system would make this change more pronounced and perhaps more effective.

This official also alluded to the ongoing conflicts regarding Lake Massapoag, and why its water level seems to be going down,

“I’m not sure anyone does know exactly how these different systems are interlinked within the overall watershed.”

In this case, the official doesn’t think funding is the issue; it is really more about expertise. He thinks there is a link between the lake and the aquifer, and the town would like to know what is causing the problem, if it could be determined without much expense, which he thinks is possible. Rather than expense, however, he feels that some people have their own “bent” on the environment and might have their own agenda when it comes to this issue.

Stoughton

In Stoughton, as in Canton, opinions varied widely on perceptions of the community's response to the perceived environmental issues. Two voices from a single town office had the most divergent viewpoints.

The first town office holder feels that Stoughton has reached a nice balance. He mentioned that he would be "curious to see an environmental scorecard" for the town, and while he would not expect an A+, he thinks Stoughton would get a good rating.

One point he stressed was that some environmentalism is going too far, even if it is for "very good and valid reasons." He thinks some people become too narrow in their focus, which can have repercussions for everyone. As an example he said,

"People will say taking water from the Quabbin Reservoir will cause environmental harm, or water out of the Taunton will cause environmental harm. [But] people there still need to have water to drink. It is counterproductive if you take that to the extreme."

The Cedar Swamp well denial seems to have left a bad taste in his mouth, and he is tired of hearing everyone say "no" when Stoughton continues to face a water crisis. He does not think the proposed well would have harmed Cedar Swamp, "but if it had, it would have been a reasonable price to pay in order to provide water."

Conversely, the second town office holder interviewed feels that Stoughton officials do not have a "vision" for the town, and that they "have not given good thought" to resource management and zoning. He also stated that the community as a whole was not engaged in the dialogue about the town's water supply problems, and he felt strongly that the community at large needed to be more involved.

A third official's comments focused mainly on town officials and the community's reactions to Stoughton's ongoing water supply problems. His perception of the debate regarding Cedar Swamp vs. Bluestone vs. MWRA is that the Selectmen simply want the cheapest solution. However, at this point funding is not the issue, but rather it is which option can be permitted. He thinks the Selectmen might want desalinization, but he is very concerned about having a private company responsible for water supply because there is no recourse if something goes wrong. He also mentioned that he feels he has a good relationship with the selectmen because he is very honest about problems.

He also noted that people (unsure if he is referring to officials or citizens) do not understand that although water is within Stoughton town boundaries, it does not mean that the town "owns" it. Rather, state permits are required to use the resource. This perception is in sharp contrast to the staff person in the equivalent position in Canton who feels Canton citizens have rights to water within their town boundaries.

Finally, this commenter felt that the public was generally apathetic to concerns over water quality and the environment. He discussed how he sent out a consumer confidence report on the

town's water and only two people called him with any questions about it. He felt the community "could have cared less." He also stated:

"This is great to protect the brooks and the streams, and I totally agree with it. We should not draw more than we've got right now to keep the balance we've got."

But, he also recognizes that if he had no other options he would suck the stream dry. As much as he likes "frogs, trees and fish," he is first and foremost a water purveyor.

General Attitudes and Knowledge of the Term “Watershed”

- Each official interviewed was able to provide a reasonably accurate definition of a watershed.
- In Stoughton, however, paid town staff tended to define a watershed as the protected zones around its municipal wells, as opposed to the larger Neponset River Watershed.

In addition to asking for a general watershed definition, we also asked a series of questions relating to watershed protection – what it means, how important this concept is in the officials’ municipal capacity, and whether officials think their citizens have a good understanding of the terms “watershed” and “watershed protection.”

- It seemed that the concept “watershed protection” was too broad or vague. When officials were asked if they or their board worked with issues relating to watershed protection, the answer was usually “no.” But upon further discussion, it was often discovered that they did work some with wetlands or Title V (the Massachusetts regulation pertaining to the maintenance of septic systems), or a more discrete area that was in fact related to watershed protection.

Canton

All three town officials had a good working knowledge of the term watershed. “Drainage” was brought up many times by the various officials when describing watersheds, both as an explanation of “where the water in the river comes from” and when talking about the need for retrofitting drainage for water quality purposes.

One Canton official also stated that:

“‘Aquifer’ may actually have an altogether different definition and outline than there is for the physical surface drainage area.”

Watershed protection

In terms of watershed protection, each official referred to specific tasks their board was responsible for that could fall under the larger heading of “watershed protection.” Official “A” referred to protecting the zones around the town’s municipal wells. Official “B” referred to wetland protection and trying to improve water quality with retrofits for drainage infrastructure. A Planning Board member also referred to his board’s role in approving drainage systems.

Both Official “A” and the Planning Board member referred to the town’s Groundwater Protection District (GPD) Bylaw when discussing watershed protection, although they expressed divergent viewpoints on its effectiveness. While Official “A” stated that he feels the GPD is being enforced sufficiently, the Planning Board member feels that the bylaw is not being fully implemented, as discussed earlier.

Finally, Official “A’s” reaction to questions about the role of the “watershed” in his day-to-day work was “Why should I care?” and “Why would you?” He is concerned about drainage on the

smallest scale, such as a culvert that might back-up or a flooding problem on a particular street. The watershed scale is too big of a picture and not relevant.

Public perception

There seemed to be a consensus among municipal officials that citizens have some general sense of the meaning of the word “watershed,” , being something along the lines of the “land around the river that needs protecting.” However it was presumed that the majority of citizens probably does not possess a real understanding, and probably not a lot of interest either, in the functionality or importance of a watershed. There was a sense that most people are probably busy with their lives and do not get involved with watershed issues. As the Planning Board member put it, “as long as water comes out of their tap, they are happy with it.”

One Canton official seemed to feel that residents who are concerned with watershed protection are “green sneakers and tree huggers,” terms used by a newspaper columnist to categorize the Conservation Commission and other environmentalists.

Sharon

Both of these officials had a strong working knowledge of the term watershed. The first official recognized that watershed refers to both the protected zones around their municipal wells and to a “stream basin.” The Planning Board member recognized that pieces of town are in different watersheds and that all land is part of a watershed.

Watershed Protection

When asked if watershed protection was an issue the Planning Board dealt with, Sharon’s Planning Board member said it was not really a factor. He noted that the Board tends to work more with Title V, Zone 2 overlay district, and surface water protection. In fact, he mentioned that the Planning Board was not involved in the Town’s plans to develop a new well.

As far as the other town official interviewed, he works with the “regulatory regime” for watershed activities. He thinks it is helpful to think in a watershed context for activities and issues that extend beyond political boundaries. He perceives of watershed protection as a “prophylactic” means to protect water systems.

Public Perception

Concerning knowledge of the term “watershed,” the Planning Board member was not sure if it would mean anything to his neighbors, but he did think that people understood the general concept that rainfall makes its way into a body of water. He also did not think that most citizens realized that the Town of Sharon is on the border of two watersheds.

On the other hand, the other official felt that because Sharon is very environmentally aware, citizens would be familiar with the term “watershed”. He also thinks that the first mailing under the Safe Drinking Water Act exposed people to information about where their water comes from, what’s in the water, and what threats there are to water quality. Citizens know their water supply is a local, groundwater-based system, and that there is a connection between all that occurs in the environs of the water supply and the quality and quantity of that supply.

Stoughton

Official “A” first defined a watershed as the areas around town wells, but later recognized the narrowness of his definition. Throughout the “watershed” discussion, Official “B” only referred to the area around his wells. The ZBA Member and the Selectman gave broader answers that touched upon where rainfall ultimately ends up.

Watershed Protection

Stoughton officials considered watershed protection to be very important because it relates to protecting municipal drinking water supply – e.g. ensures that the wells can produce and that the water is safe. Beyond drinking water supply, watershed protection did not seem to be an issue for the ZBA or the Selectman.

The Selectman discussed how watershed protection really is not an issue his board works with regularly. Nevertheless, he stated that the town needs to work towards:

“Developing a certain ethic within the community, [so] that people will not just throw stuff in a stream, or discharge wantonly into a stream or fill a wetland.”

He also felt that the selectmen have the:

“Opportunity to be cheerleaders for a number of things, and that is one of them, and I don’t think we do very much in that area quite frankly.”

When asked if he thought the other selectmen would agree with him, he said, “absolutely no;” there is no dialogue on these issues.

Development was also mentioned. Official “B” talked about development being completely regulated in Zone 2. The ZBA member discussed the need to keep development away from wetlands and to ensure that onsite sewage disposal does not cause contamination. The ZBA member went on to say that he feels watershed protection is important because more development is leading to water scarcity. At the same time, he recognizes that property owners do have certain rights.

Public Perception

Stoughton officials think some of the population understands the term “watershed” or “watershed protection,” but not a majority. Again, it seems that people understand and support more discrete issues, such as open space and wetlands protection. One official felt that the fact that Town Meeting passed bylaws to protect groundwater and drinking water indicates the importance of watershed protection to citizens. Finally, the Selectman stated that although many Stoughton citizens could probably define watershed, they do not think in terms of living in a watershed or having a watershed address.

The Level of Understanding of Streamflow Issues

This section of the interview included a variety of questions relating to streams and ponds. The questions pertained to the ability to name streams and ponds in each town, the definition of “healthy” streams and ponds, and a general discussion about whether the water bodies in town are in fact healthy. Moreover, we asked about the public’s perception of these resources, if ponds or streams affected property values, and finally, general opinions on dam removal.

- In general, everyone interviewed felt that the small streams that run through each community (i.e. Massapoag Brook, Steep Hill Brook) are so small as to be insignificant and overlooked by both town officials and residents.
- Everyone was able to name ponds, identify their recreational attributes and had an opinion on their health.
- Only three officials could readily name many of the streams in their towns. Others described the stream locations, but didn’t know their names, or if they were significant enough to warrant a name.

In terms of people’s perception of brooks, consensus was that people simply do not think about them. One official in Stoughton stated,

“Between you and [me], they’re off the radar screen, which is why I don’t understand why people get so uptight about it.”

Canton

It is worth noting the disparity between the official who lives in Canton and the two who live outside of town when asked about recreation on Canton’s ponds and streams.

Officials “A” and “B” in Canton did not seem to think there is very much recreation on the water bodies in Canton. Official “A” declared his opinion on the lack of recreational use by stating, “they’re polluted,” as well as the fact that it take, “people with money in order to have time to sit back and enjoy nature.” He perceives a low level of interest in outdoor activities in Canton.

Official “B” sees the brooks as sources of potential liability, and without much recreational value. He would prefer to put a fence around them, but people would “go bananas” even though the brooks are not used for recreation now. He also thinks that the ponds and river see relatively little recreation.

In sharp contrast, the Planning Board member who grew up in Canton and continues to live in town feels that the water resources are a source of pride, especially as people become more educated about these related protection issues. He also admits that there are some people who will never care. He named both Ponkapoag and Reservoir Ponds as recreational destinations, as well as other ponds used for fishing.

Sharon

In Sharon, the major surface water resource is Lake Massapoag, which is a source of considerable town pride. Both town officials recognized the role the Lake plays in maintaining the system of streams downstream of it, but one official was more familiar with the streams themselves. He admitted that he's "aware of them, but doesn't know how aware the public is."

While the Planning Board member could identify the location of several streams in town, he did not know the streams' names or if they even had names. Both officials discussed how small the streams are, and the first official summarized by saying, "they are fairly discreet, small, more recognizable for people devoted to these things, like fishermen."

The ponds in town, like Lake Massapoag and Mann's Pond were more readily named as recreational destinations for swimming, boating and fishing than were the streams, although there is perceived to be some fishing along the streams. It appears that most citizens focus their energies on ensuring the viability of Lake Massapoag as a recreational amenity, while managing the Lake for both recreation and downstream needs seems to be the town's major concern.

Stoughton

In Stoughton the officials interviewed described citizens' attitudes about streams from "benign neglect" to "some pride." For the most part, there is no strong constituency for stream protection, and the brooks are probably not even part of people's consciousness. One official pointed out that part of the reason there is not much interest in protecting brooks and streams is due to Stoughton's severe water problems, which is an ever present issue for the town.

Along those same lines, nobody could think of any recreation taking place along the brooks, although people might have fished along them at some point. Instead, Ames Pond seemed to be the recreational destination, with a swimming beach as well as some boating and fishing.

Public perceptions of streams

An official in Canton made a statement that was echoed by other officials, including a Stoughton official, that "very few people want to deal with nature on nature's terms," and that people are very selective about what part of nature they do like. He went on to say that in many cases the Town of Stoughton is really fighting the forces of nature to maintain what we like, such as ponds or large grassy areas.

The official from Stoughton added to this opinion by stating,

"Where we look and see it's natural, they see a mess. They cut their lawns and shrubs. And, the brook is an overgrown mess."

The officials from both Stoughton and Canton discussed that they are called upon to "clean up" the streams and the river, but that the Conservation Commission makes it difficult for them to do so. NepRWA was also cited as preventing the town's DPW from undertaking this type of maintenance work.

Healthy Streams

- There was no consensus on the healthiness of streams and ponds, although the most officials thought that both streams and ponds could be healthier.
- There were no major differences in how officials described healthiness relating to a pond as opposed to a stream.
- The most prevalent description of unhealthiness related to water quality or more aesthetic problems like shopping carts, too much algae or general “nasty stuff.”

One of the most descriptive definitions of stream or pond health came from one Canton official:

“There’s a biology there. A natural, vast diversion of aquatic life that has to be there to have a healthy life in a river. All the little guys up to the big fish, healthy, aggressive life that goes on there, aquatic life, both in the river and along the banks and the land beside it that is in balance.”

Canton

In Canton, officials had very divergent views on the health of the ponds and streams. On one hand, the Planning Board member, the long-time Canton resident, commented that things were getting better, such as Bolivar Pond being cleaner than it was 10 years ago, and noted that the East Branch system was relatively clean.

On the other hand, another town official felt that Canton’s streams are not healthy. He raised concerns about runoff bringing contamination such as salt, oil and gas into streams like the East Branch. Finally, a third Canton official thought his definition of healthy might describe areas of the river in Fowl Meadow, a State-designated Area of Critical Environmental Concern, but not necessarily the other streams in town that were affected by the town’s commercialization.

Sharon

The discussion on water-body health in Sharon focused on Lake Massapoag. The lake seems to oscillate, in its water levels, and as mentioned earlier, there is an ongoing debate of how much water the lake needs. The Planning Board member mentioned that at the end of the summer it is often necessary to “hose kids off when they get out of the lake.” He also noted that while water quality might not be unhealthy, the algae blooms are unappealing.

Another town official felt that healthy is “in the eye of the beholder.” For example, what a swimmer might consider healthy – clear, cool and deep – might be different from conditions considered healthy for a fish – sufficient habitat, turbidity, and some algae. He went on to say that there needs to be a balance between those two perspectives.

Stoughton

Stoughton officials had mixed feelings on the health of the town’s ponds and brooks, although no one seemed to feel these water bodies were particularly healthy. Health seemed to be an aesthetic- or water-quality-based concern, for the most part. All of the officials mentioned the unpleasantness of weeds and algae. The Zoning Board member cited seeing fish as an important indicator of health, while other officials needed to be prompted to mention wildlife. While another official did not offer a definition of healthy, he did comment:

“Will Ames Pond be there and in good shape for the rest of my life? No doubt the answer is yes.”

The official went on to describe Ames Pond as shallow and choked with weeds, a state of conditions perceived as horrible by some people. He states that there is no money to do anything about it, so he does not get excited about it, or spend time thinking about it. He went on to say that although there are many areas under his jurisdiction which prompt his quick reaction, this is not one of them. The pond would need careful evaluation and study from engineers and scientists before they would take any action.

While Official “A” feels that most surface water in town is healthy, such as Steep Hill Brook or Glen Echo Pond, he feels that Ames Pond is so low that it’s stagnant. In contrast, the Zoning Board member feels the opposite; he has some reservations about Steep Hill Brook, but he thinks Ames Pond is relatively healthy. Official “A”’s definition of healthy included the following condition:

“Relatively clean and healthy water; free of toxins and disease; with some natural organic matter and good water quality.”

Finally, the Selectman generally felt that none of the streams in town were healthy and that he would, “probably rather fall into one of the ponds than one of the brooks.”

Streams vs. ponds

- The majority of officials believes that having a stream on one’s property is more of a liability than an asset.
- Ponds tended to be seen as an amenity affording a “water view.”

Canton

The officials were in agreement that in most cases a pond or a brook could add to property value. Official “A” in Canton thought a pond would add more value because of the view and access, while a brook or river would be more of a liability because of flooding. The Planning Board member commented that he thought a pond might be more of an asset than a brook, but he really was not sure why. Official “B” thought both brooks and ponds could be amenities.

Sharon

According to one official in Sharon, a pond has a positive effect on property value. In the same vein, when asked about the effect of a brook on property value, he stated:

“If the brook is of good environmental quality, I would think anyone would think it’s an asset, other than if it were subject to flooding.”

The Planning Board member thought that a pond or a brook would have a neutral effect on property values. He listed both positive and negative factors to consider, such as a private beach on a pond versus child safety issues of the same water body. He also negatively referred to the

wetland regulations as “limits to what you can do on your property,” in relation to brooks and ponds.

Stoughton

The negative attributes associated with having streams on one’s property were numerous. One official in Stoughton stated that people are “nervous” with water around, that they see it as unclean and messy. Another official stated that a brook on someone’s property might be seen as a public safety issue for small children or as a liability because wetlands regulations would limit building. A third official believes that people would think, “it was terrible” to live along a brook because it would be a haven for mosquitoes and wouldn’t allow for a lawn.

Dams

- There was unanimous agreement that there would be no reason for dam removal.

The most common reactions were that ponds would run dry, and ponds have been part of the landscape for as long as anyone could remember. Other comments were a simple “why?” No one could see any tangible benefits, unlike the reception towards the Edwards Dam in Maine.

While most responses were a simple “no,” the question did elicit some more serious reaction. One Canton official thought that the “standard should be as high for people taking down a dam as it is for building one.” He felt that people were trying to revert back 200 years, and that dam removal would destroy the ecology that had developed as a result of the dam. It would make more sense to repair the dam than to destroy one “ecology” in order to create another.

- All of the officials focused on the dams located on very visible ponds in town (i.e. Bolivar Pond in Canton, Mann’s Pond in Sharon), without recognizing that there are smaller dams on the streams.

It is very likely that these officials are not aware of some of these smaller dams. This is another example of the perception that the Neponset’s tributaries are overlooked in day-to-day life.

Dam Ownership

Canton

One official stated that Canton does not own any dams. Another commented that the town “probably owns some; no one has done a check.” The officials also talked about Plymouth Rubber Company owning some of the dams in town. The third official referred to Canton’s control of the dam at Bolivar Pond.

Sharon

In Sharon it was generally recognized that the town owned most of the dams and that many of them dated back to the 1800’s.

Stoughton

One town official was unsure if the town owned any dams. Another mentioned that there were two in town, but that Easton owns one of them. The other two officials did not know of any

dams in town, and one stated that the “brooks were not used for power.” One Stoughton official mentioned that there were spillways and pipeways that the town managed.

The Level of Understanding of Water Supply and Wastewater Management Issues and Their Connection to Rivers and Streams

Water Supply & Water Conservation

- Although the communities agree that MWRA is expensive, most Canton officials perceive dependency on this agency as being negative, while most Stoughton officials think MWRA is their best option for augmenting the water supply.
- Every town has indoor “low flow” devices available, but the public’s awareness of these programs and their effectiveness is uncertain.
- Water Departments are placed in the unique and often difficult position of promoting water conservation while at the same time needing to be an economically viable department that sells water.

Canton

At the time of the interviews, only Canton had a connection to the MWRA in addition to a local water supply. There is a general sense of mistrust towards MWRA, ranging from cost concerns to a belief the agency might not be able to provide water at some point in the future.

For example, the Planning Board member cited a time 10-12 years ago when MWRA sent the town a letter stating that the agency did not have a sufficient water supply, and that it had concerns it would not be able to provide enough water to Boston. As a result, leak detection was promoted, and any MWRA town that could develop another local supply was encouraged to do so. Canton had two prospective water supply sites and was told to develop them or else MWRA would initiate development and sell Canton the water at MWRA prices. The Planning Board member does not seem confident that this situation will not repeat itself in the future.

For both the Planning Board Member and another Canton official, the key to a truly sufficient water supply is self-sufficiency. Buying water from the MWRA is not only expensive, but it indicates that Canton’s local water supply is insufficient. A separate official also mentioned that 3 local wells have been taken off line due to contamination.

On the other hand, one Canton official feels that the town is fortunate to have both the MWRA and the local water supply. He also mentioned that the town has found it necessary to abandon wells because of Volatile Organic Compounds (VOC’s) and other “toxics from farms screwing-up the wells.”

Water Conservation

Unlike the other two communities, Canton does not tend to face serious water shortages because the town can always increase its water supply via the MWRA. As a result, water conservation measures are not as stringent as they are in Sharon and Stoughton. In fact, one official stated that Canton has not had to institute mandatory water conservation since he has been in office. The town does offer indoor water conservation devices to residents, as part of their agreement with

the Water Resources Commission (an office within the Massachusetts Executive Office of Environmental Affairs) and NepRWA, and most town buildings have been retrofitted with low flow devices. Canton has instituted voluntary outdoor water restrictions during droughts.

The Planning Board member stated that he thinks that the industries in Canton use the vast majority of water. He feels it would make the most sense to target education about water conservation to the industries as a way to protect water supply.

In addition to mentioning plumbing codes and low flow fixtures as conservation measures, one town official also discussed another issue pertaining to water supply: the inability to pump water fast enough. According to him, the town's problem is not a lack of water, but a lack of capacity to pump the water, and that if the standpipes are overdrawn, there simply is not enough time for them to recover.

Effect of wells on rivers & streams

While the Official "A" was unsure of the effect of local wells on rivers and streams, Official "B" and the Planning Board member recognized that wells do affect water levels. The Official "B" commented on the fact that there is only so much water that one can take without having a detrimental effect on the river. Official "A" described the geology of the area, that Canton's wells run from shallow to ledge, and that water runs towards a fault.

Sharon

While both Sharon officials described the town's water supply as sufficient, the first official added that water supply is sufficient because the town is conservative about outdoor water use and because citizens are willing to live with a water management program. He feels these types of programs are "a given" for most towns.

Water Conservation

As far as water conservation, indoor conservation seems to be an area that could use further development, according to the first official. The town offers low flow aerators and other water saving devices at a subsidized cost, but there is not much demand for them. The Planning Board member was not aware that the town offered this program.

The area where officials feel they are making progress in water conservation is outdoor water use. The Planning Board member discussed the program that was in place during last year's drought from May-September, which consisted of a ban on weekend watering. The system included a series of warnings and fines. He felt that there were many people who wanted to do the right thing, but that there were also others who did not care if they had to pay a fine. Another problem consisted of new homes with irrigation systems that the homeowner does not know how to control.

In addition to the watering bans, the town also tried to educate citizens about appropriate outdoor watering uses, including the provision of a water department telephone number that citizens could call to find out how much rain had fallen in order to determine if they needed to water their lawn.

Effect of wells on rivers & streams

The Planning Board member repeated throughout the interview:

“I don’t know enough about ecology and the interrelated system, but I do know the systems have to be interrelated in some fashion, and there has to be a link from one to the other...”

He stated that the town would like to know more about the link between the lake and the aquifer, if they could do it without too much expense, but it is not a priority. When discussing Sharon’s pursuit of a new well he states that it would be good to have,

“The other well in Taunton as opposed to the others in Neponset. It might be nice because it’s pulling from another source.”

The other official from Sharon responded by saying, “Come back in 6 months,” when asked about the effects of wells on streams. As part of the Environmental Impact Report for the new municipal well the town hopes to develop there will be monitoring wells and computer models that should provide this type of information.

Stoughton

Every Stoughton official described the town’s water supply as insufficient. Official “A” discussed the need to shut down wells to avoid damage. Official “B” blamed the problem, in part, on poor planning. The ZBA Member described “water rations” and how there has been no outside water use for years. The Selectman stated that there are more people in town than can be adequately serviced by the municipal water supply.

Because of the water shortage, the town of Stoughton has been searching out new water supplies, namely the Cedar Swamp well, an MWRA connection, or the proposed Bluestone desalinization plant. Official “B” perceived citizens’ distrust and negative reactions to MWRA to be the result of high sewer costs. While he readily admits that the MWRA is an excellent system, he does not understand why it is so expensive.

The ZBA member does not trust the MWRA. He believes it was “created in a hurry,” and there was not enough oversight. He cites increasing sewer rates as an effect of this haste.

Conversely, the Selectman and Official “A” both prefer MWRA to Bluestone, mainly because they feel MWRA has a proven track record, while they do not know if Bluestone would really be able to produce sufficient water 365 days per year.

Water Conservation

Every official is quick to point out the progress Stoughton has made in water conservation, from the distribution of low flow indoor plumbing devices to outdoor water bans and extremely low per capita water use. Also mentioned was the 4:1 offset for new businesses, which the Selectman feels is a joke. He believes this is impossible to measure and that it has had the affect of hampering “good” commercial development.

While the town's ability to conserve water and persevere under a water shortage does seem to be a source of pride, there is a sentiment that Stoughton's citizens want to be able to use water "like everyone else."

Effect of wells on rivers & streams

Officials had varying opinions on the effect of wells on surface water levels, and in fact, some of the opinions were completely contradictory. Official "B" stated that because municipal wells are relatively shallow, there is an obvious interrelationship between wells and surface water levels. When discussing water quality testing at Ames Pond, he mentioned that surface water does end up in the town's wells. In sharp contrast, the ZBA member believed that municipal wells are deep enough that they do not affect ponds or streams.

Both Official "A" and the Selectman feel that there is some connection between the wells and surface water levels. Official "A" stated that there is a connection, "but not the one you think." He described how Stoughton got a 0 on MPA testing, which looks for larvae on the well screen. He also noted that the wells do not take from surface water, but that maybe in one case the wells take from groundwater supplies that feed into surface waters. He also talked about specific ponds, such as Old Albert's Pond that might not change at all, while the Pratt's Court well is practically dry. The Selectman simply feels that to "some degree" there is an impact, and cites this as the reason for the denial of the Cedar Swamp well. Nevertheless, he did not think the effect of wells on water levels is very substantial.

Wastewater Management

- With the capital costs sunk into sewer systems and concerns that failing septic is a health problem, sewer is seen as the most appropriate solution for towns that have already made the investment.
- While officials acknowledge the recharge benefits of onsite treatment, they generally do not think that the recharge would be significant enough to enhance their municipal water supply.
- Although towns are allocating funds for inflow/infiltration (I/I) work, there is a sense that this is a never-ending, but necessary, battle.
- Most officials are in agreement that one of the biggest problems with septic is that citizens are not good at maintaining their systems.

Canton

While the officials agree that ideally wastewater should recharge the watershed from which it originated, the solution to the situation is not that simple. The Planning Board member listed the areas in town where septic simply cannot work because of soils, such as York Street. One official thinks septic systems would be fine if people maintained them, but they don't. There also are some citizens who prefer septic systems because they are cheaper. However, without proper maintenance they become more expensive in the long run.

Another Canton official's response is a bit different. In reference to a lawsuit filed by NepRWA against the town, he stated, "I think you guys are dead wrong." He feels that NepRWA is trying to force towns "through action and legislative direction to commit to not using MWRA for sewer." He thinks that this is a goal that will not be politically or publicly popular. He cited that

citizens and the town have been paying into MWRA for 30-40 years, and that people are expecting to get hooked into the system. It simply is not appropriate to tell them they cannot.

He also does not think that maintenance is the issue with septic systems, but rather that the problem is that the older systems simply cannot meet the new regulations. Even if they were properly maintained, the current systems would not be sufficient. He also mentioned that it costs \$40,000-\$50,000 for a new septic system.

All of the officials are aware of the town's program to repair I/I, although one official seems more skeptical about the program's success. He recognizes how difficult it is to measure its effectiveness, and he feels this is the area where Canton and NepRWA could work together.

Sharon

Sharon is different from Stoughton and Canton because the town runs entirely on septic systems. As such the officials have very different views on wastewater management. Ultimately, Sharon has consciously chosen to limit development, while the other two towns have policies that favor development.

Both officials pointed out that sewer is helpful for siting homes and businesses in locations where it might otherwise be difficult to locate them. Because the town has not wanted to promote growth, it has stayed on septic systems. According to the Planning Board member, Title V regulations serve two purposes: to improve septic systems and to serve as a means to influence the nature of development, as the new systems require more land.

Both officials acknowledge the recharge benefits of septic systems. The Planning Board member pointed out that some of the older systems were discharging directly into the groundwater, and that the new, mounded systems can destroy a backyard. Additionally, they noted that Sharon faces some of the same maintenance problems with septic systems as the other communities.

Stoughton

For the most part, officials in Stoughton prefer sewer to septic systems for wastewater disposal.

While the idea that septic keeps wastewater local for recharge seems to be widely understood, it still does not sell the idea to Stoughton's officials. Instead, the officials are focused on concerns about failing septic systems and water from septic systems entering municipal wells.

Officials also did not think that Stoughton's being on septic would alleviate the town's water problems. Official "A" thinks local wastewater would be a disaster for Stoughton because of rock and ledge. He also stated,

"I do not believe that if everyone was on [a] septic system that we would have more water in our wells."

In terms of perceived preferences among citizens, sewer appeared to be favored over septic. Two officials stated that a sewer hook-up is a selling point for a home, and that while a septic system is not a benefit, neither is it a detractor, if it is meeting Title V. Some of the negatives associated with septic systems concern the new, mounded systems, which Official "B" describes as a "big

raised lump with a candy cane sticking out of it,” as well as failures due to poor maintenance. Nevertheless, Official “B” summarized the general consensus:

“People don’t have a clue between sewer and septic – totally based on cost, each thinks the other is cheaper. [They are] really about the same.”

Stoughton’s officials have a good grasp of I/I, and it also appears that the people involved with Town Meeting have understood the need for this work because they continue to allocate funds for it. The primary argument for I/I work has been to keep costs down, while the environmental benefits are perceived as ancillary. There is some disagreement between the Selectman and Official “B” concerning I/I work. The Selectmen would like to use some of the Town Meeting I/I funding to study the cost/benefit analysis of this type of work, while Official “B” thinks all the funds should be used for the actual repairs.

Alternatives

The final question of the interviews concerned alternatives to the current systems of wastewater disposal. While several ideas were discussed, there did not seem to be a sense that the current means, traditional sewer and septic, were going to be replaced any time soon.

Alternatives included:

- Clivus toilets, like those at various parks
- Treatment plants that include settling ponds, greenhouses, etc.
- Enhanced septic systems or mini-treatment plants for a condo complex
- Municipal gray water systems for irrigation
- Small regional plants that would discharge into a river or a settling pond
- Satellite treatment facility for specific areas, such as around a lake or pond
- Water reuse for drinking water
- “Tight tanks” for specific neighborhoods

Many of the officials talked about the fact that Deer Island was overbuilt and that there is excess capacity there. As a result, communities that have tied into the system have no financial incentive to think creatively. More than half the officials thought smaller town or regional treatment plants would have made sense, originally, but that because Deer Island has been built it is now a moot point.

Findings from the Interviews with Municipal Officials

The general observations from the interviews with municipal officials in Canton, Sharon and Stoughton can be summarized with the following key findings:

- There is a sense that brooks and streams are too small to warrant significant interest by citizens or town officials. Due to their size, these tributaries are overlooked.
- The perception by municipal officials is that a stream can be a liability due to its public safety issues; can be aesthetically unpleasant because of its natural (read: messy, overgrown) state; and can be a hassle to have on one's property because of wetlands regulations.
- Most officials know what a watershed is, although they don't necessarily see its relevance in their day-to-day work.
- Watershed protection as a concept is so broad as to be almost meaningless to many officials, and perhaps to citizens as well. There is a better understanding of discrete topics that fall under the umbrella of watershed protection, such as issues concerning open space, wetlands, and Title V septic regulations.
- Towns are generally skeptical of warnings about water/wastewater impacts to surface and groundwater supplies because there is not enough accessible, related information.
- Additionally, while many officials recognize that onsite treatment is better for recharge to local groundwater supplies, they do not think it is significant enough to "add water" to their municipal wells.

Clearly, there is a need for increased education even at the municipal level about basic watershed functions and the interconnectedness between water withdrawals and the health of streams, wetlands and ponds. The officials who participated in the interviews demonstrated a range of understanding about issues related to streamflow, groundwater recharge and wastewater management. There seems to be a need for further discussion about the relationship between managing water supplies for people and for the natural environment.

It appears that most decisions made at the local governmental level are based on economic constraints. There needs to be greater movement towards managing water at the local level in ways that will ensure future supplies that are economically viable and preserve hydrologic functionality of the local streams and surface water bodies.

The BUDGETS project is serving an important role in researching the connection between water supply, wastewater, and groundwater, and will help to supply municipal officials with necessary information. In addition to the opinions and perceptions of the municipal officials in these communities, NepRWA will also attempt, through the second phase of the

community assessment, to understand the overall knowledge and perceptions of the residents within Canton, Sharon, and Stoughton.

Community Assessment Phase II

Public Opinion Survey

Background

The second phase of NepRWA's Community Assessment was a public opinion survey. Residents selected at random from each of the three BUDGETS towns of Canton, Sharon and Stoughton were surveyed by phone and asked various questions about water use, drinking water, and water quality and quantity in local rivers and streams. NepRWA, in partnership with Applied Marketing Science, Inc., designed a questionnaire that would assess the local population's understanding of the water-related issues within their communities, and conducted a survey in three Neponset Watershed communities. Throughout the survey, specific questions were asked in order to collect the following information about the communities within the BUDGETS study area:

- People's willingness to take part in water conservation efforts to reduce overall water consumption in their homes, on their lawns, and in their towns.
- People's level of understanding about the need for water conservation.
- If people's willingness to conserve water is a result of wanting to protect the environment, or to save money, or some other reason.
- The willingness of town governments and water departments to encourage water conservation among residents and what approaches will be used to convince residents to conserve water and reduce consumptive water use practices.
- Whether people trust their towns' ability to manage local water resources for all purposes.
- People's preference for wastewater disposal and their understanding of how wastewater treatment can impact local water resources.

Additionally, with the information provided in the results of the survey, NepRWA would be better able to evaluate the areas, geographically and politically, where more support would be needed to further the goals of the organization and of the BUDGETS project.

Methodology

NepRWA worked with marketing consultants Applied Marketing Science, Inc. (AMS) to design and implement the survey. A questionnaire was developed that covered key issues like:

- Drinking water
- Wastewater
- Streams/Rivers
- Conservation
- Demographics

It was determined that a telephone survey would be the best method to utilize in order to reach the most random selection of community members from Sharon, Stoughton, and Canton. Bennett Research programmed the questionnaire in CATI (Computer-Assisted Telephone Interviewing) and conducted the interviews. The sample consisted of 3,404 phone numbers for the three towns, which were acquired from telephone book CDs. Data collection was conducted from July 2, 2002 through July 13, 2002. A total of 300 surveys was completed, with 100 from each of the three towns. AMS then compiled the results and performed cross-tabulations and other statistical analysis of the results.

The complete survey and raw results are available on CD-ROM. A summary of the results follows.

Towns Surveyed

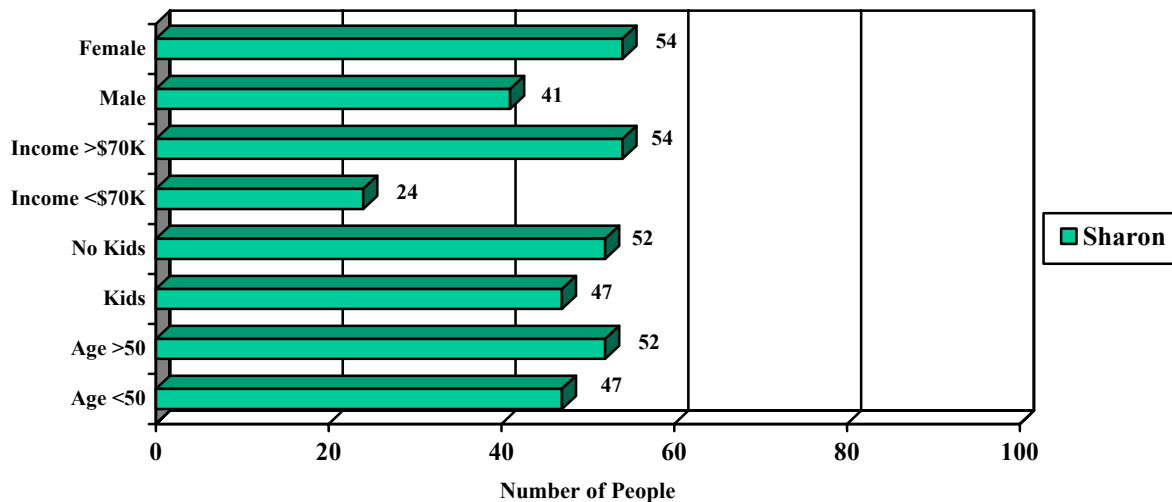
The public opinion survey asked several questions about demographics, such as age, income, and number of children. This information was compared to the U.S. census data for Sharon, Canton, and Stoughton to determine if the results shown in the survey would be representative of the population within each town. The census data and results of the questions regarding demographics are shown below for each town.

Sharon

Relying on the 2000 U.S. Census data we see that the population of Sharon totals 17,408. Additionally, the census exhibits that there are approximately 5,934 households in Sharon, with 90% being owner-occupied and 10% being renter-occupied. The average household size is 2.92 people. The median value of owner-occupied homes in Sharon is \$270,600. The occupations that are held by most Sharon residents include management, professional and related occupations (62.8%), service occupations (7.2%), sales and office occupations (23.8%), construction and maintenance (2.7%), and transportation, production, and material moving occupations (3.4%).

The data collected from the public opinion survey correlates in some areas with the statistics found in the 2000 U.S. Census. Results to specific survey questions about gender, age, income, and number of kids can be seen in *Figure 1*.

Figure 1: Respondents From Sharon



The survey results reveal that 47% of respondents from Sharon are under the age of 50, compared with the census results which show that 88.7% of all residents in town are under 54 years of age. The survey also exhibits that 24% of households in Sharon earn less than \$70,000. The census data, meanwhile, explains that 40.8% of households earn less than \$75,000.

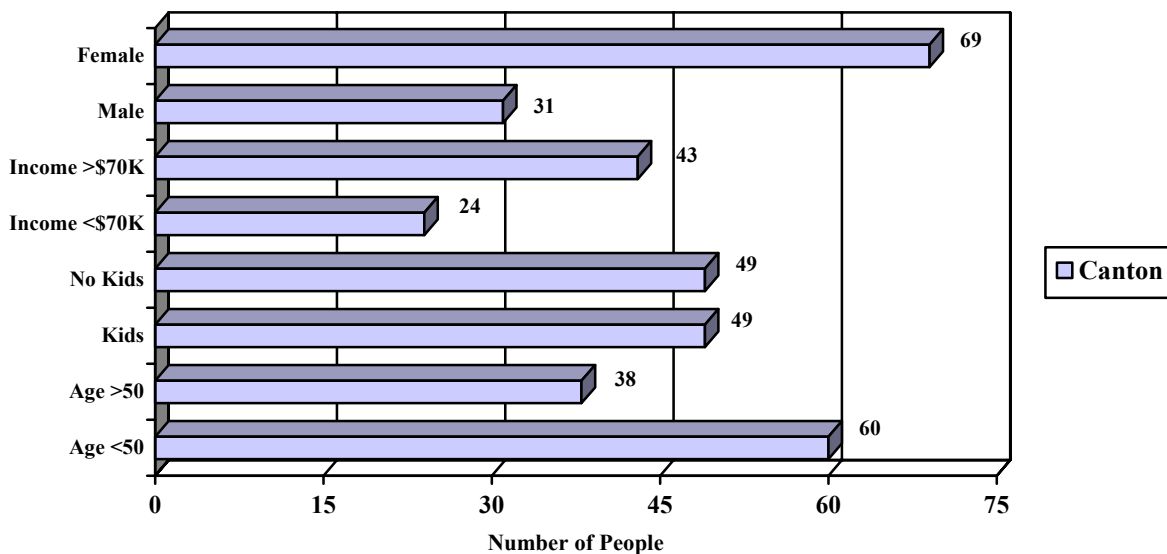
The survey results demonstrate that 7% of respondents went no further than high school, while 92% of respondents completed some college or higher. The census reveals that of residents 25 years or older, 12.9% attained a high school degree only, and 83.9% completed some college or higher level of education.

Canton

The 2000 U.S. Census shows that the population of Canton totals 20,775. Additionally, the census demonstrates that there are approximately 7,952 households in Canton, with 74.2% being owner-occupied and 25.8% being renter-occupied. The average household size is 2.56 people. The median value of owner-occupied homes in Canton is \$266,500. The occupations that are held by most Canton residents include management, professional, and related occupations (48.6%), service occupations (11.6%), sales and office occupations (26.3%), construction and maintenance (7.7%), and transportation, production, and material moving occupations (5.6%).

The data collected from the public opinion survey correlates somewhat closely with the statistics found in the 2000 U.S. Census. Results of specific survey questions about gender, age, income, and number of kids can be seen in *Figure 2*.

Figure 2: Respondents From Canton



The survey results reveal that 60% of respondents from Canton are under the age of 50, while the census shows that 73.5% of all residents in town are under 54 years of age. The survey also indicates that 24% of households in Canton earn less than \$70,000. The census data, meanwhile, proves that 54.2% of households earn less than \$75,000.

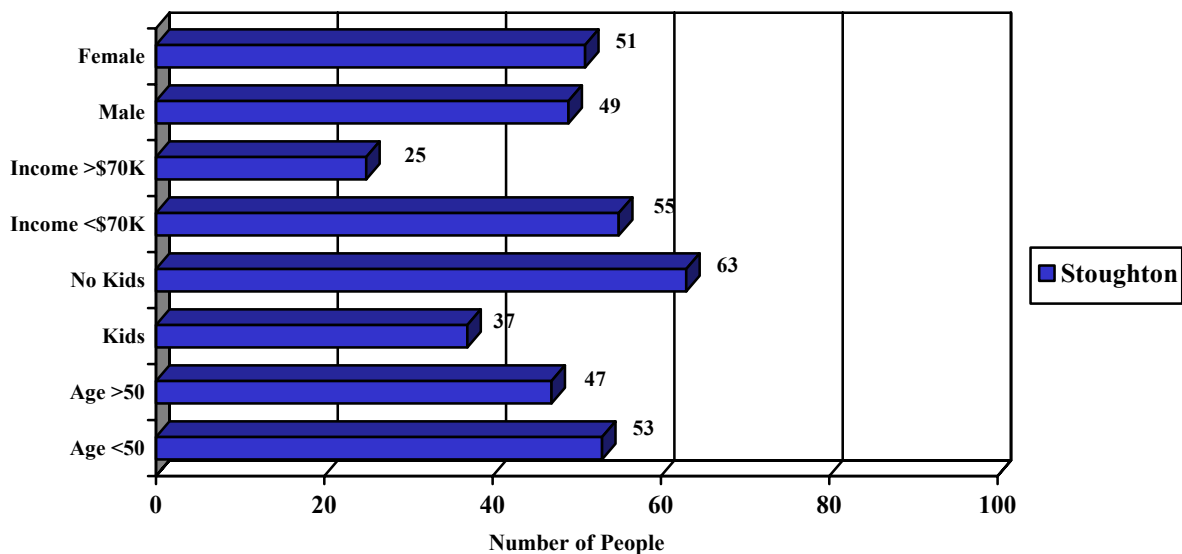
The survey illustrates that 9% of respondents went no further than high school, while 88% of respondents completed some college or higher. The census explains that of residents 25 years or older, 24.3% attained a high school degree only, and 68.9% completed some college or higher level of education.

Stoughton

The 2000 U.S. Census shows that the population of Stoughton totals 27,149. Additionally, the census reveals that there are approximately 10,254 households in Stoughton, with 74.5% being owner-occupied and 25.5% being renter-occupied. The average household size is 2.6 people. The median value of owner-occupied homes in Stoughton is \$174,200. The occupations that are held by most Stoughton residents include management, professional and related occupations (36.3%), service occupations (12.7%), sales and office occupations (30.5%), construction and maintenance (8.1%), and transportation, production, and material moving occupations (12.5%).

The data collected from the public opinion survey correlates closely with the statistics found in the 2000 U.S. Census. Results of specific survey questions about gender, age, income, and number of kids can be seen in *Figure 3*, along with other survey and census data about the study area.

Figure 3: Respondents From Stoughton



The survey results indicate that 53% of respondents from Stoughton are under the age of 50, while the census shows that 45.2% of all residents in town are between the ages of 25 and 54. The survey also demonstrates that 55% of households in Stoughton earn less than \$70,000. The census data, meanwhile, reveals that 64.3% of households earn less than \$75,000.

The survey indicates that 17% of respondents went as far as high school, while 82% of respondents completed some college or higher. The census reveals that of residents 25 years or older, 35% attained a high school degree only, and 54.2% completed some college or higher level of education.

Results

The goal of the public opinion survey was to gain an understanding of the general population within the study area so that implementation of necessary actions aimed at more efficient water use and management would be directed at appropriate audiences, utilizing techniques that will make the greatest impact. At its most basic level, the survey sought to determine how people use water for indoor and outdoor purposes and how they feel about local streams and water resources. What will be revealed in the results of the survey should provide NepRWA, local municipal officials and State leaders with an idea about the general attitude among people towards local water resources. Specific issues or concerns among the general population will be identified. Additionally, the results should provide answers to the following questions:

- Is there a willingness among people to change their water use habits? What specifically would encourage a change in current water use trends: ensuring drinking water quality? Ensuring drinking water quantity? Protecting fish and wildlife?
- What are peoples' opinions of the quality of their drinking water? What are peoples' opinions of the quality of water available in the local environment?
- How concerned are people about their local water resources?

An overview of the results is presented in this section. We have highlighted what we believe are the most statistically important and interesting results within each of the following sections:

- Water Use
- Tap Water
- Sewer vs. Septic
- Streams and Rivers
- Water Conservation

The discussion of results of the survey also incorporates NepRWA's interpretation of relevant information pertaining to the study and to watershed issues.

Water Use

The public opinion survey asked participants several questions about how they use their water, both indoor and outdoors and whether they thought the water supply in their towns was adequate. Respondents were also asked if they thought the water supply within their towns were adequate to meet the needs of streams, rivers, and wildlife.

For several years, NepRWA has based much of its water conservation efforts on the premise that people generally do not understand that water supplies in towns are finite and interconnected with environmental health, and thus must be responsibly managed in order to meet the needs of more than the human community. This premise was considered when forming several of the questions about water supply which were designed to test this assumption. Similarly, the results of these questions were meant to gauge people's awareness that the needs of stream and river habitats must also be met in order to prevent degradation to these specific environments as well as prevent long-term water management problems for the human communities. The questions were designed to help NepRWA acquire an understanding of residents' perception of the water supply issue as it relates to human use as well as to environmental demand.

Examples of outdoor uses for which people are concerned about having enough water for include lawn and garden watering, car washing, and being able to fill pools.

In this section of the survey, people were asked to respond to the following statements:

- In my town, there is enough water to meet indoor water needs.
- In my town, there is enough water to meet outdoor water needs.
- In my town, there is enough water to meet the needs of streams, rivers, and wildlife.

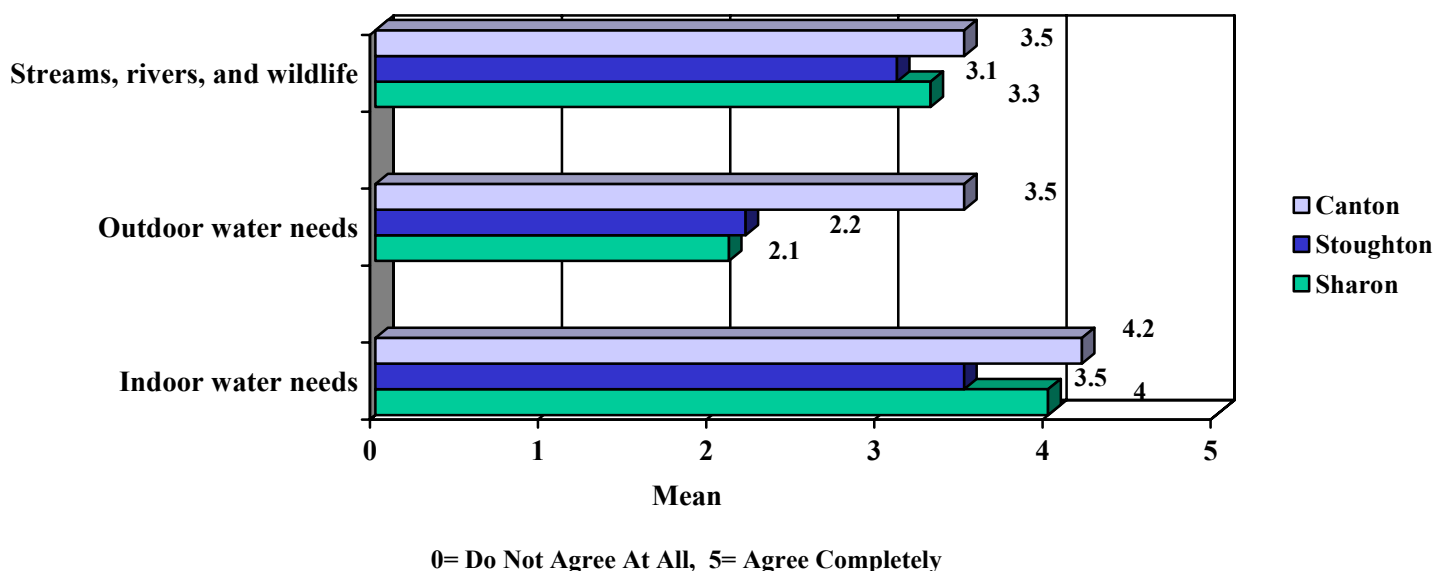
The respondents were asked to state at what level they agreed with the statements. They were asked to give a rating using the following rating scale:

- 1—completely disagree,
- 2—disagree,
- 3—neither agree nor disagree,
- 4—agree, or
- 5—completely agree.

The questions were designed to gauge residents' confidence in their town's ability to meet various water needs. The answers by respondents varied by town, and by question, as represented below.

In the following graphic, *Figure 4: Town's Ability to Meet Various Water Needs*, the respondents' answers were tallied and the resulting average is shown for each town.

Figure 4: Town's Ability to Meet Various Water Needs



When asked questions about water quantity and whether there is enough for current uses, the main concern for all respondents was having enough water to meet outdoor water use needs. The survey participants were read the statement, “In my town, there is enough water to meet outdoor water needs, for things like lawn and landscape watering, washing cars, and filling pools.” 78% of respondents from Sharon completely or mostly disagreed with this statement, and 75% of respondents from Stoughton completely or mostly disagreed. 20% of respondents from Canton completely or mostly agreed that there is enough water in their town to meet outdoor water needs.

The increased concern for each town’s ability to meet outdoor water needs (when compared to the concern for meeting other water needs) may be a result of past water bans within these communities. During the years of 2001 and 2002, the Neponset Basin suffered a drought that brought little rain throughout the summer months. Increased attention was brought to the outdoor watering of lawns and landscapes as towns implemented watering restrictions to combat excessive water use. The Town of Sharon imposed a ban that limited outdoor watering to two hours per day, two days per week throughout the year of 2002. Similarly, Stoughton implemented a continuing ban that limited outdoor watering to Tuesdays, Thursdays, and Saturdays, from 2:00 pm until 6:00 pm.

Many Neponset Valley residents receive their water from the Massachusetts Water Resource Authority (MWRA), which has reservoirs in the central region of the state and treats and carries water to communities throughout Massachusetts. Communities that receive water from the

MWRA are often not restricted by outdoor watering bans, and thus may feel more secure in their town's ability to provide water to meet outdoor needs. Canton receives the majority of its water from the MWRA and did not impose watering bans during the 2002 drought.

Respondents in Stoughton and Sharon, who were especially concerned with their towns' ability to meet outdoor water needs, are perhaps more attuned to the situation of needing to protect their water supply. Sharon pumps its water from local town-owned wells, and residents may be more aware of their water supply and the fact that it is limited (as opposed to residents within MRWA communities, who are less anxious about the prospect of dwindling supplies). Stoughton residents might also be more aware of their town's struggle to provide water during its long-running water emergency.

While water used for indoor/outdoor purposes comes from the same source, people generally do not worry about bans or limitations being imposed on indoor water use alone. When read the statement, "In my town there is enough water to meet indoor water needs," most respondents generally agreed that their towns were able to supply enough water for everyday indoor uses. In fact, 83% of all respondents agreed or completely agreed that there is an adequate supply of water for indoor uses. Indoor water restrictions were not included in the recent water bans within the towns, thus most people probably did not see any correlation between indoor water use and the drought status in their town. 91% of Canton respondents and 85% of Sharon respondents mostly or completely agreed that there were adequate water supplies to meet indoor water needs, compared with 68% of respondents from Stoughton.

When asked if they agreed with the statement, "In my town, there is enough water to meet the needs of streams, rivers, and wildlife," 42.3% of all respondents answered that they did agree. 21.7% of those asked did not agree that there was enough water to meet the needs of streams and rivers. 29% of respondents from Sharon and 27% of respondents from Stoughton completely or mostly disagreed with this statement, while only 17% of Canton respondents answered similarly.

While all three towns expressed moderate concern about there being enough water in their town for environmental needs, this issue was clearly not the most urgent among the respondents. This reaction could indicate a possible lack of awareness about the connection between drinking water supplies (especially when coming from local aquifers) and water levels in local streams and rivers. There needs to be increased efforts by town officials and water suppliers (as well as NepRWA and other environmental groups) to educate town residents about this connection and how the local aquatic habitats can be adversely impacted by excessive indoor and outdoor water use.

Tap Water Concerns

NepRWA was interested in assessing people’s knowledge of where their tap water comes from, and if people understand the relationship between the source of their tap water and how the responsible government entity manages the water supply for the town. Survey participants were asked several questions about the quality of their tap water, and how confident they are that responsible parties (i.e. government) are ensuring safe and adequate sources of tap water for indoor residential use.

Survey participants were asked the following questions about tap water:

- Where does your own tap water come from?
- How concerned are you about the *quality* of your tap water?
- How concerned are you about the *quantity* of your tap water?
- How responsible do you think federal, state, or town government is for ensuring the quality and quantity of your tap water?
- How good of a job is [answer selected in previous question] doing in ensuring the quality and quantity of your tap water?

Table 1 shows the results to the question, “Do you know where your tap water comes from?” As is evident, most people answered that their tap water comes from town wells. For the towns within the BUDGETS study, this answer represents an accurate percentage because only Canton receives part of its drinking water supply from the MWRA. Sharon residents receive their drinking water from town-owned wells or private wells. At the time of the study, Stoughton residents received the majority of their drinking water from town-owned or private wells, except during water emergencies in which MWRA supplemented the local water supply.

Table 1: Tap Water Supply Source

	MWRA	Town Wells	Private Wells
Respondents from Canton	71%	29%	3%
Respondents from Sharon	5%	85%	2%
Respondents from Stoughton	25%	53%	19%

Presumably, if one knows where his or her tap water comes from, there should also be some level of awareness about the overall quality of that water. People with no knowledge of where their drinking water comes from might be less able to distinguish any potential problems or concerns with the source of that water, or conversely might be more apprehensive about the quality of the water they are drinking.

However, answers to the question about tap water supply sources revealed that one quarter of the residents surveyed from Stoughton believe that their water comes from the MWRA system. In actuality, the Town of Stoughton relies mainly on its own town-owned wells for drinking water, unless there is a water emergency, during which time water is supplied by MWRA through Canton pipes. Due to the fact the water supplied to Stoughton residents is coming from local sources, it could be presumed that people would have a greater knowledge of the quality and quantity of their drinking water. However, during the time at which this survey was conducted, Stoughton's application to the MWRA had only recently been approved, and permanent supplies of water from MWRA would still be years away. The uncertainty of Stoughton residents about their water source could point to a lack of communication or education within the town and by local officials about the source of Stoughton's water. Or perhaps the confusion stems from on-going discussions among town residents and municipal leaders about their dwindling water supply and the perceived urgency to join the MWRA and connect Stoughton to the reservoir water supply system.

It is also surprising that 5% of Sharon residents answered that they receive their water from MWRA. While this is statistically a small percentage of the total number of people surveyed in Sharon, it does deserve some attention. It has been the opinion of NepRWA over the years that Sharon community members and officials are usually well-informed about local water supply issues, particularly in light of dropping water levels in Lake Massapoag. The 5% number could simply represent people new to the town, or people who are unaware or uninformed about where their water comes from.

In order to gauge their confidence in the quality of their tap water, survey participants were asked about which level of government (town, state, or federal) is most responsible for maintaining the tap water supply. Respondents were given choices of "not responsible at all," "somewhat responsible," "very responsible," and "don't know," therefore it is possible that respondents answered that multiple levels of government had some responsibility in maintaining adequate water supplies. Most respondents answered that each level of government has some involvement in maintaining and managing their town's tap water supply.

Table 2: Governmental Involvement in Managing Tap Water Supplies ¹

	Town Government	State Government	Federal Government
Respondents from Canton	51%	32%	13%
Respondents from Sharon	71%	26%	8%
Respondents from Stoughton	40%	23%	13%

People were also asked if they thought the level of government most involved in managing the tap water supply has done a good job of ensuring the quality and quantity of tap water supplies. Most respondents thought that their town government had the greatest responsibility in managing

¹ Note that total amounts may not equal 100% due to answers by some respondents that multiple levels of government are involved in managing tap water supplies.

tap water supplies. Sharon respondents had the highest confidence in the job their town government was doing, with 80% answering that their town is doing a “good” to “excellent” job of managing their tap water supply. 62% of Stoughton respondents and 76% of Canton respondents felt that their town government was doing a “good” to “excellent” job of protecting tap water.

It is also worth noting that Sharon respondents are more likely to drink their tap water than are residents of Canton or Stoughton. 95% of Sharon respondents drink their tap water, compared with only 77% of respondents from Canton and 77% from Stoughton.

Respondents were given the opportunity to comment on what concerns them most about the quality of their tap water. Overall across the three communities, the top three concerns about tap water were:

- Contamination (35%)
- Health (21%)
- Unsure it’s clean enough (14%)

Wastewater

One of the potential problems facing the Neponset River Watershed is the loss of water due to interbasin transfer. Most communities within the watershed get their drinking water from wells that pump water from local aquifers. However, many communities within the watershed rely on the MWRA sewer system, at least in part, to dispose of wastewater. Hence water that is pumped from local wells in the watershed is subsequently shipped away for disposal, creating a net loss of water within the watershed and impacting the Neponset River and its tributaries.

The result of this loss in water from the Neponset Basin can be tied to a net loss of groundwater recharge. Without this recharge, it becomes increasingly difficult to maintain natural and healthy streamflow levels during dry weather within the river and its tributaries. As water is lost from the groundwater system and surface water bodies, a potential water deficit is created within the Neponset River Watershed.

Communities that rely on septic systems for their wastewater disposal needs are not contributing to the transfer of water from the Neponset Watershed to Boston Harbor. The wastewater that is created in these communities is treated on-site, within the ground, and remains available to recharge the local groundwater system. While there is some argument about the ability of septic systems to adequately protect the quality of groundwater, it is commonly accepted that if septic systems are properly maintained and regularly pumped out, they pose little or no threat to the quality of local water resources.

NepRWA's public opinion survey included several questions about sewer vs. septic, some of which dealt with the issues of water quality versus water quantity, and others which sought answers to the wastewater disposal methods with which people were more comfortable and thought would better protect the environment. An example of the questions in this section of the survey include:

- Is your home on the town sewer system or do you have a private septic system?
- Which do you think is more expensive (sewer or septic)?
- Which do you think better protects tap water quality or quantity?
- Which system would you prefer for your own wastewater disposal needs?

The number of sewer system customers and septic system owners was evenly represented in our sample, with 50% of the respondents on sewer and 49% using their own septic system (1% of respondents were unsure upon which system they relied on for wastewater disposal). When separated by town, the division of sewer vs. septic users in the sample is as follows:

Table 3: Septic vs. Sewer

	Sewer	Septic	Don't Know
Canton	80%	18%	2%
Sharon	2%	98%	0%
Stoughton	69%	30%	1%

While the majority of septic users rated septic as “somewhat inexpensive” to “reasonable,” the majority of users of the sewer system rated sewer as “somewhat expensive” to “very expensive.” In fact, half of the respondents (53%) thought septic was less expensive than the municipal sewer system, particularly respondents from Stoughton (62%). When asked what contributes to the higher cost of the sewer system, respondents answered that the following factors are connected:

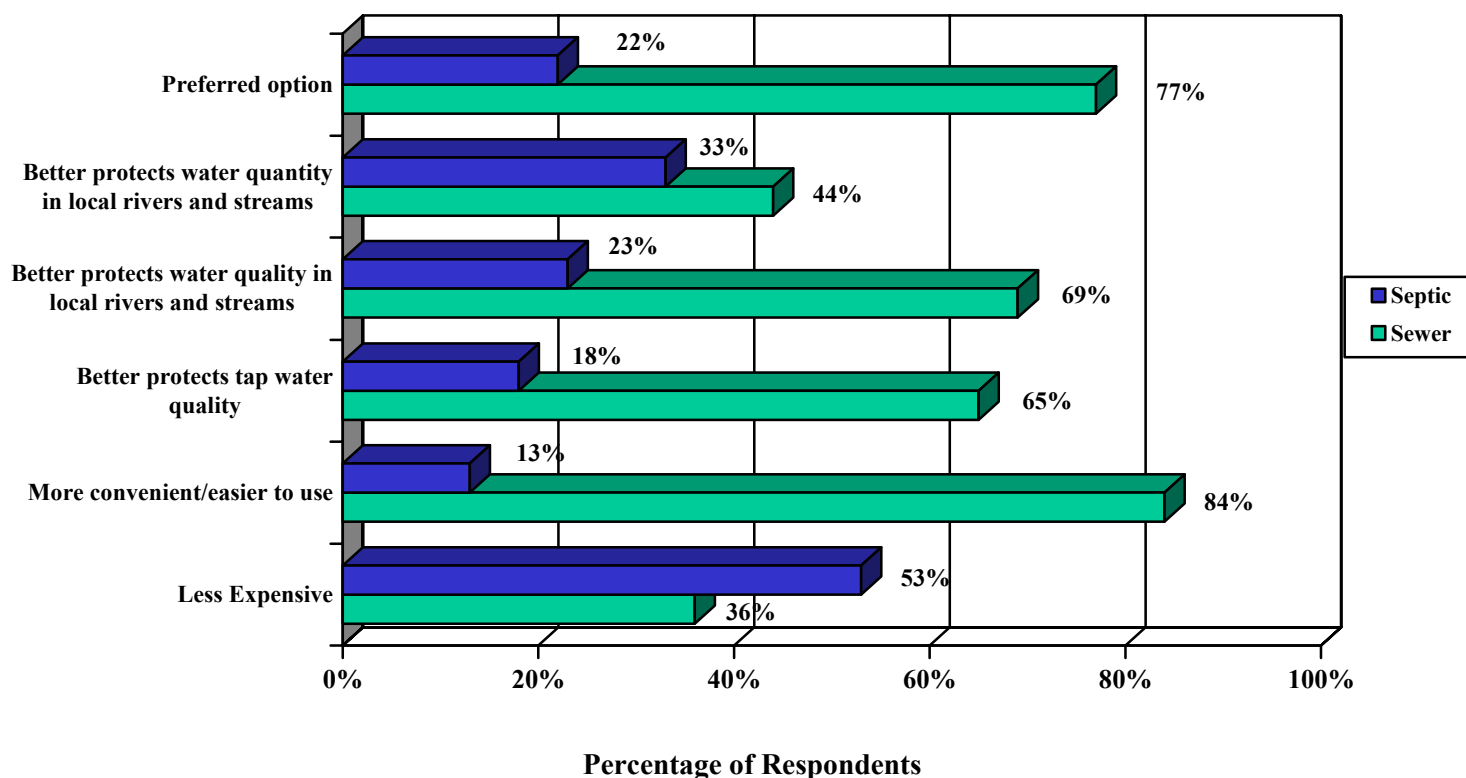
- The process involved in treating the wastewater;
- Maintenance of the pipes and the actual treatment facility at Deer Island;
- The fees associated with the administration of MWRA;
- The decades-long effort to clean and restore water quality in Boston Harbor.

Survey participants were also asked about the effectiveness of the sewer system and septic systems in terms of protecting water quality, water quantity, and fish and wildlife. These questions included:

- Which do you think better protects water quality in local rivers and streams?
- Which do you think better protects water quantity in local rivers and streams?

The following graphic, *Figure 5: Sewer System versus Septic Systems*, shows how survey participants responded to questions comparing sewer system with individual septic systems in terms of the overall cost, convenience, and effectiveness in protecting the environment.

Figure 5: Sewer System versus Septic Systems



Clearly, people prefer the sewer system for wastewater disposal instead of individual septic systems. 77% of all respondents answered that the sewer system is their preferred choice. The results show that 69% of people perceive that the sewer system is better at protecting water quality and 44% perceive it to be better able to protect the quantity of water in streams. 65% answered that the sewer system is more effective at protecting the quality of tap water. The support for the municipal sewer system is also based on the fact that 84% of respondents think the sewer system is more convenient and easier to use.

These assumptions about the superior environmental performance of sewers contradict what NepRWA's experience observing sewer system malfunctions and maintenance issues that have significantly contributed to the fecal coliform contamination in local streams. Through years of water quality monitoring in the Neponset River and its tributaries, NepRWA has found that the problem areas with the greatest occurrences of contamination resulting from the presence of sewage in streams were located in areas with debilitated and leaking sewer pipes. In many Neponset Basin towns, aging sewer infrastructure is to blame for the towns' inability to comply with Environmental Protection Agency (EPA) standards for swimmable and fishable streams. Individual septic systems, when properly maintained, pose little threat of contamination to nearby streams, and also achieve groundwater recharge to the local aquifer, a feat which the

municipal sewer system is unable to accomplish as it is designed to carry water away from the groundwater source.

This perception of the sewer system as the “better” wastewater disposal method, at least in terms of ability to protect water resources, clearly points to the need for towns and residents to be better informed about this issue. People rely on the sewer system to relocate wastewater, and thus any potential pollution problems associated with it, away from their home, neighborhood, and town, effectively creating a safer environment. What needs to be made apparent to this audience, however, is that in reality the underground infrastructure that transports wastewater is often times unreliable and can actually cause more contamination of ground and surface water than do well-maintained septic systems.

This point needs to be emphasized to the residential population. An informed community can be effective in urging their towns to maintain the local sewer system with needed improvements in order to reduce the risk of contamination. Likewise, people in towns like Sharon and much of Stoughton can work to maintain healthy septic systems while encouraging new development to utilize individual septic systems rather than connecting to the MWRA or municipal sewer system.

When educated about the problems that can plague a municipal sewer system, residents might change their opinion about the most effective and environmentally sound methods to treat and dispose of wastewater. The following description of inflow and infiltration, a problem that causes millions of gallons of groundwater to be lost from the watershed each year, was read to the survey participants who were then asked a series of questions based on the information they had just heard.

“Septic systems treat sewage at individual homes and put treated wastewater back into the ground so that water isn’t lost to the local environment. Sewer pipes can sometimes drain away groundwater, through cracks or leaks in the pipes, and result in reducing the amount of water in local rivers and streams.”

Before hearing the information about inflow and infiltration, 77% of respondents expressed a preference for being on the sewer system, regardless of the method they currently employed for wastewater disposal. However, after hearing the preceding statement about inflow and infiltration, 37% of respondents answered that they would change their preference from sewer to septic. The main reasons cited for switching to septic were to preserve water and protect the environment. Of those who answered that they would still stay with their initial choice of sewer systems, the reasons cited included easier maintenance, lower cost, and the perceived risk of contamination to water resources by individual septic systems.

Based on the response of survey participants who would change from sewer to septic in order to reduce the impacts of inflow and infiltration, it could be presumed that with education, more residents would look favorably towards septic systems. Septic systems, if properly designed and maintained, can be long-lasting disposal options that benefit the local aquifer and nearby streams. Survey participants who answered that they relied on septic systems for wastewater disposal and treatment were asked to answer how often they pumped or planned to pump their

systems. 72% of the 145 respondents who have septic systems answered that they pumped or planned to pump their septic systems at least once every three years. Approximately 8% of respondents who have septic systems answered that they pumped or planned to pump out their systems once every 10 to 20 years, and 3.4% of respondents who have septic systems answered that they never pump out their systems.

According to the results of this public opinion survey, it is clear that people do have an interest in protecting the environment. Unfortunately, many residents have not been made aware of the best way to reduce the impacts on local water resources and aquatic habitats through changing particular actions or habits. Education about the safest wastewater disposal method (e.g. in terms of potential groundwater and surface water contamination) and ways to properly maintain current systems would most likely be well received by the public, and would result in reduced impacts on the environment.

Streams and Rivers

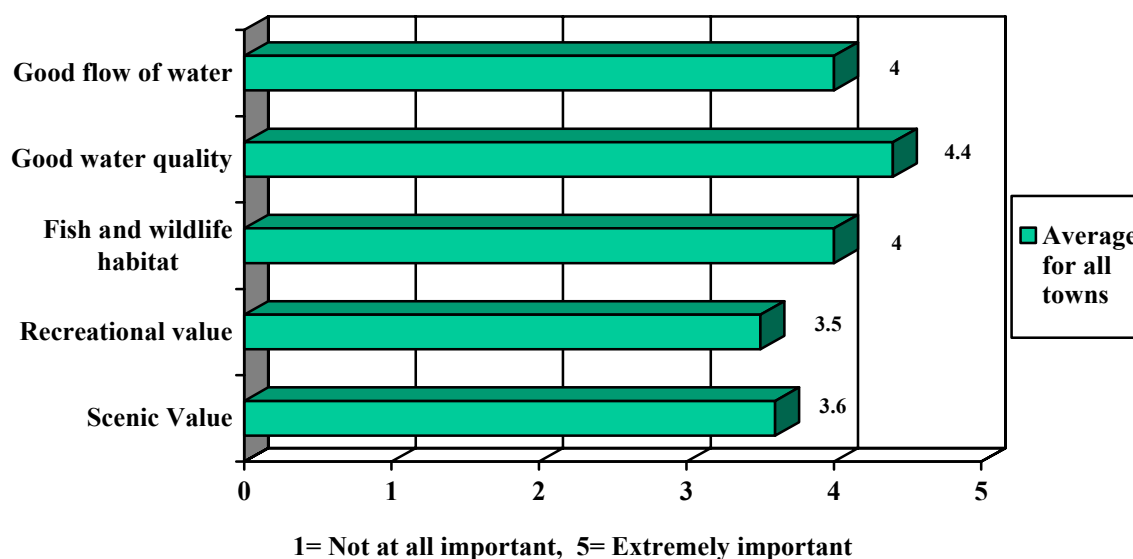
Moving away from water supply and wastewater issues, the next set of questions focused on issues related to local streams and rivers in Sharon, Stoughton, and Canton. Survey participants were asked to rate the importance of the following characteristics of the streams and rivers in their town:

- Scenic value
- Recreational value
- Fish and wildlife habitat
- Cleanliness or good water quality
- A good flow of water at any given time

Participants in the survey were also asked to rate the condition of the streams and rivers near their homes, in terms of meeting the above characteristics.

The following graph, *Figure 6: Importance of Stream Characteristics*, shows the results of the first set of questions pertaining to the importance of characteristics like scenic value, recreational value, habitat, water quality, and water quantity, as gauged by the respondents. Respondents were asked to rate each stream characteristic, scaled between “not at all important” (1) and “extremely important” (5).

Figure 6: Importance of Stream Characteristics



In contrast to the expectations of the municipal officials, respondents from all three towns rated the importance of the selected stream characteristics quite similarly. As shown in *Figure 6*, water quality ranks highest in importance, indicating that people value clean water in the environment.

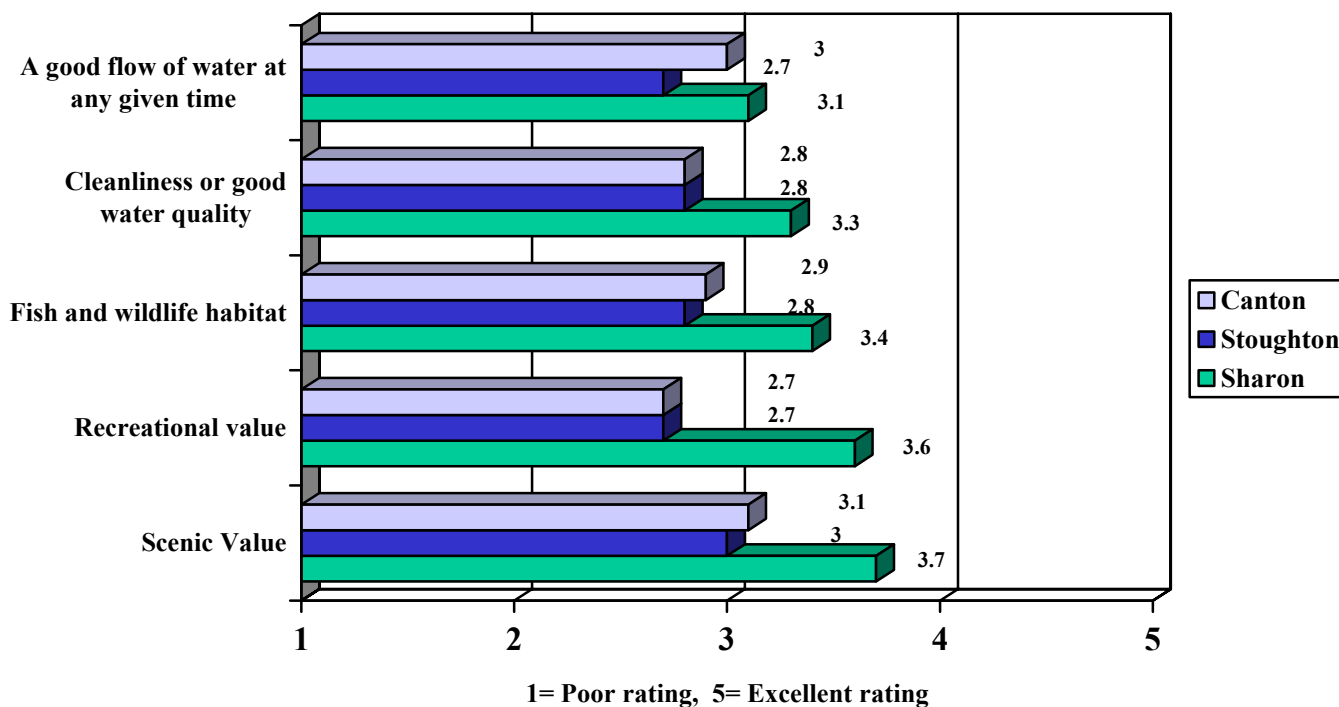
Recreational value was the characteristic that was given the least importance among the available options. This low ranking may speak to the issue of local residents' lack of access to the Neponset River.

Water flow and adequate fish and wildlife habitat were rated similarly as being very important characteristics of streams. Scenic value was given less importance but still was rated as a more valuable characteristic than recreational value.

Overall, respondents in all three communities placed a higher value on the characteristics representative of healthy streams, such as good water quality and quantity, and adequate fish and wildlife habitat. Because these characteristics appear to be important to people within all three towns, it can be assumed that people respect the needs of the local environment and are willing to take action to protect these interests. If people had rated recreation and scenic characteristics with more importance, it could be assumed that people would associate high value with the natural aspects of the stream habitats and thus, would be less inclined to work to protect them.

While respondents from the three communities generally agreed on the importance of stream characteristics, there were slightly differing opinions about the actual condition of the streams in each town. *Figure 7: Condition of Streams by Town*, shows the average rating given by respondents to the actual condition of the local streams in their towns. The respondents were asked to base their answers on the previously discussed characteristics (scenic value, recreational value, fish and wildlife habitat, good water quality, and good flow of water). Respondents were asked to give a rating ("1" indicating a poor rating, "5" indicating an excellent rating) of the streams near them or in their town, based on these characteristics.

Figure 7: Condition of Streams InTown



Residents from Sharon have the highest overall rating for the actual condition of the streams within their town. Respondents from Stoughton have the lowest rating for streams in their town in regards to water quantity (having a good flow of water at any given time in the stream), fish and wildlife habitat, and scenic value. Canton respondents were equal or somewhat higher in their ratings to Stoughton respondents, but consistently rated the condition of their streams lower than Sharon respondents.

Survey participants were also asked several questions about whether they thought streams near them were worth being protected and preserved by their town. 82% of respondents thought it was very or extremely important to protect wildlife in and around the Neponset River and its tributaries. 36% and 38% of respondents from Canton and Sharon, respectively, answered that it is extremely important to protect and preserve wildlife in and around the Neponset River, compared with 25% of respondents from Stoughton. Respondents most interested in this goal had lived in the towns less than 15 years, were under the age of 50, earned \$70,000 or more per household, and were female.

Only 3 respondents indicated that it is not at all important to protect and preserve wildlife. Those three individuals were from Stoughton, were 50 years old or older, had lived in the town for over 15 years, were connected to the sewer system, had no children, and earned less than \$70,000 per household.

When asked if their towns should spend money to clean-up or maintain local streams and rivers, the majority of respondents from Sharon, Canton, and Stoughton answered that it is very or

extremely necessary (68%, 65%, and 64%, respectively). The people who answered that their town should spend money to clean up or maintain local streams tended to be women, under the age of 50 years old, and living in a household with an annual income of more than \$70,000.

Water Conservation

It is NepRWA's goal to utilize the data from the Water BUDGETS project to promote water conservation in towns and individual homes as a means to protect local water resources for human needs, as well as to ensure adequate streamflow levels for fish and wildlife within the Neponset River Watershed.

To this end, the public opinion survey included several questions to gauge people's willingness to partake in water conservation efforts as well as their reasons for or against conserving water in their homes and in their lawn and landscape practices.

First, people were asked to name their top water concerns. The top two concerns mentioned by respondents from all three towns were:

- General water quality and cleanliness (47%)
- Not having enough water for current uses (45%)

Survey participants were also asked the following questions about water conservation:

- How necessary do you think it is to conserve water in your home? Why?
- How necessary do you think it is for your town government to encourage water conservation? Why?

As shown in *Figure 9, The Need for In-Home Water Conservation*, the majority of respondents from all three towns thought it was very or extremely necessary to conserve water in their homes. On average, only 6% of respondents answered that it was "a little necessary" or "not necessary at all" to conserve water in their homes.

Figure 9: Need for In-home Water Conservation

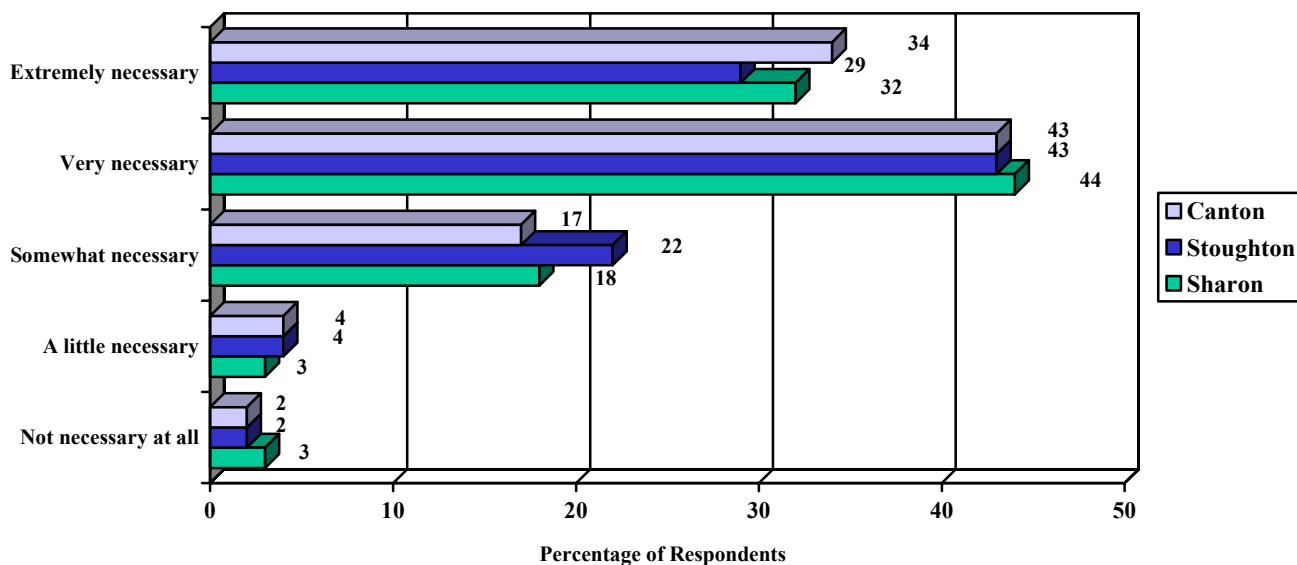
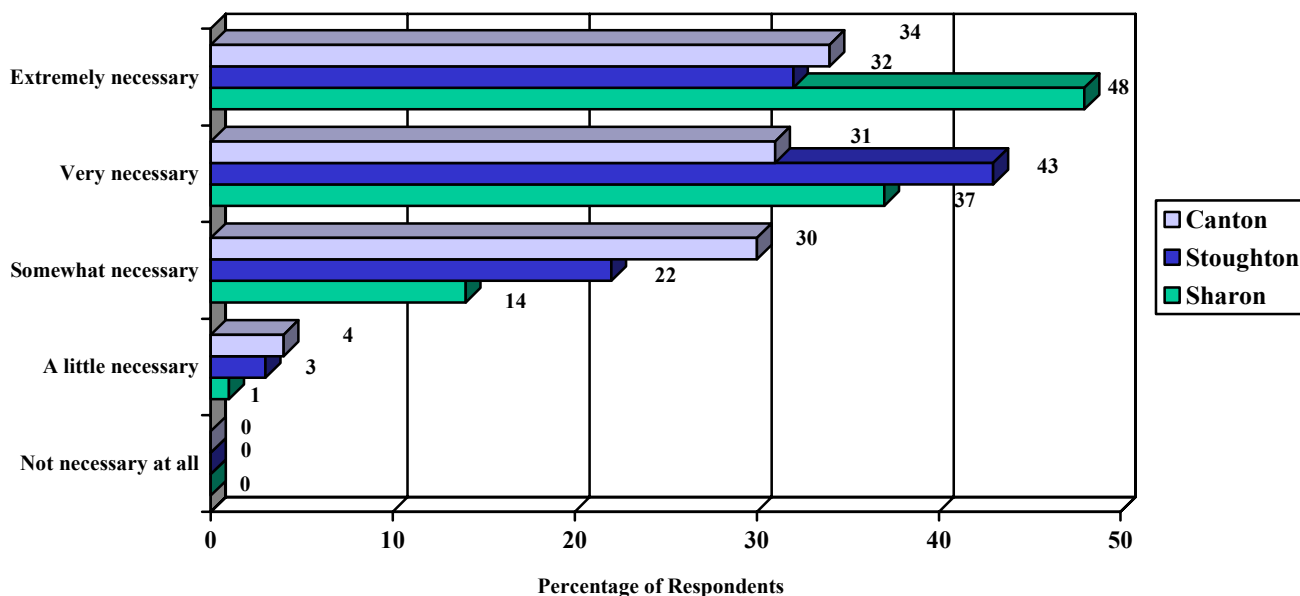


Figure 10: Need for Town Government to Encourage Water Conservation, shows how necessary people think it is for their town government to encourage water conservation by local residents.

Figure 10: Need for Town Government to Encourage Water Conservation



The results shown in *Figures 9 and 10* show that people in all three towns understand that water conservation is needed at an individual level in all homes. In fact, the majority of respondents answered that it is very or extremely necessary for in-home water conservation to occur and that their town governments should encourage it

Figure 10 shows that 85% of respondents from Sharon think that it is very or extremely necessary for the town government to encourage water conservation. This does not mean that people within Sharon would not otherwise be conserving water in their homes; *Figure 9* indicates that 76% of Sharon residents answered that it is very or extremely necessary for in-home water conservation to occur. The results seem to indicate that Sharon residents look to their town government to ensure that water conservation is encouraged in all homes, and that perhaps there needs to be programs in place within Sharon that will consistently encourage and provide support to residents trying to conserve water.

Likewise, 75% of Stoughton respondents answered that it was very or extremely necessary for their town government to encourage water conservation, perhaps also indicating that they are looking to their municipal leaders to guide and support them with programs and incentives for conserving water.

Canton respondents actually rated the need for in-home conservation the highest, with 78% answering that it is very or extremely necessary to conserve water indoors (versus 76% of Sharon respondents and 72% of Stoughton respondents). However, when rating the need for

town government to encourage water conservation, only 65% of respondents from Canton thought it was very or extremely necessary. Respondents from Sharon and Stoughton put greater emphasis on the need for their town governments to encourage water conservation (85% and 75%, respectively). The reason(s) behind Canton's lesser need for town encouragement in regards to water conservation may stem from past attitudes towards their municipal officials, a feeling that water conservation should not be a town priority, or perhaps dissatisfaction with other initiatives in Canton that have not been supported or encouraged by the town.

Among all three towns, the most popular reasons cited as to why water conservation is necessary were²:

- To ensure an adequate tap water supply (70.9%)
- To educate people and provide encouragement (answer for why towns should encourage water conservation) (14.3%)
- To keep my water bill down (12.1%)
- To protect the environment (12.1%)
- To protect a limited resource (6.4%)

People clearly are most interested in ensuring that their tap water supply is protected. Towns that rely on local aquifers for their water supply would likely be able to launch effective water conservation campaigns, largely due to the fact that the greatest motivating factor for conserving water and reducing excessive use by residents and businesses is protecting supplies for future use. However, the residential population would also appear to be influenced to conserve water in order to protect the local environment and to reduce individual costs for water.

The survey also provided an opportunity for respondents to agree or disagree with several statements about water use and conservation. The respondents were asked if they agreed with the following statements (respondents used a scale of, 1—do not agree at all, 2—disagree, 3—somewhat agree, 4—almost entirely agree, and 5—completely agree). The numbers following each statement indicate the percentage of people from all three towns answering that they completely or almost entirely agreed vs. the percentage of those who did not agree at all.

- The amount of water I use inside my home affects water levels in local streams and rivers. 57 % agree vs. 9.7 % disagree
- Watering my lawn has *no* effect on nearby streams and rivers. 24.3 % agree vs. 45.7 % disagree
- Rivers and streams are seriously impacted by water that leaks into the sewer system through cracks in the underground pipes (the question is asking about inflow and infiltration). 52 % agree vs. 4.3 % disagree

² This was an open-ended question and people were allowed to give more than one answer.

- I would be willing to redirect the downspouts on my house so that rain will soak into my yard instead of running onto the driveway or into the road.
78.7 % agree vs. 5.3 % disagree
- I would be willing to incorporate plants and shrubs in my yard that require less watering.
72 % agree vs. 6 % disagree
- I would be willing to pay more on my sewer bill if it meant that fish and wildlife in my town would be better protected.
38.3 % agree vs. 18.5 % disagree
- I would be willing to pay more on my sewer bill if it meant that pollution would be reduced in local streams and rivers.
45.7 % agree vs. 13.9 % disagree
- I would be willing to have my toilet replaced with a water-saving model in order to conserve water.
64 % agree vs. 10.3 % disagree
- I would be willing to use a rain barrel to collect rainwater for watering my plants and shrubs.
58.6 % agree vs. 15 % disagree

Most respondents agreed that local rivers and streams were impacted by human water use and leaking and faulty infrastructure related to the sewer system. The majority of respondents agreed that they would take part in certain water conservation efforts in order to protect local water resources and the environment. However, a few respondents less likely to agree to take part in conservation efforts that would require a larger financial commitment like paying more for sewer services. The percentage of respondents willing to change their landscaping habits or redirect downspouts was greater.

In other words, people expressed more willingness to take part in tangible, one-time efforts to conserve water, like creating a more water-efficient landscape, redirecting downspouts, or replacing their toilets. Respondents were less agreeable to spending more money on their sewer bill in order to protect fish and wildlife or reduce pollution in local streams.

As a result of knowing the kinds of conservation efforts in which people generally will and will not take part, there will be greater opportunities for municipalities, water providers, and NepRWA to utilize specific water conservation techniques to motivate people to change their water use habits.

Demographics

To complete the public opinion survey, respondents were asked a series of demographic questions. The answers to these questions would shed light on not only the demographic make-up of the sample communities, but also how certain characteristics like age, gender, income, and average length of residence in town factor into a person's likeliness to take part in water conservation initiatives.

Some of the results of these questions are shown below for all town towns within the sample.

- Residents who are older (50+) and have lived in town longer (15+ years) are less willing to undertake conservation measures, or pay more for their water/wastewater service in order to protect water quality and aquatic habitats.
- Residents who are under the age of 50 and have lived in town for less than 15 years are willing to pay more on their sewer bill to protect fish and wildlife or to help reduce pollution.
- Residents who are under the age of 50 and have lived in town for less than 15 years are more apt to think it is necessary for town government to encourage water conservation in order to educate people and provide encouragement.
- 82.1% of residents connected to the sewer system always or often attend town meetings vs. 66.5% of residents with septic systems who always or often attend town meetings.
- 76.8% of residents who voted in the last town election think it is very or extremely necessary for their town to encourage water conservation.

Additional questions were asked that addressed people's interest in town events and political happenings. The questions and corresponding responses are shown below.

- How often does someone in your household attend town meetings?

	Always	Often	Occasionally	Never
Sharon	18%	42%	23%	16%
Stoughton	47%	40%	7%	6%
Canton	30%	46%	14%	9%

- Did you, yourself, vote in the last election?

	Yes	No
Sharon	85%	14%
Stoughton	78%	67%
Canton	67%	32%

- Does someone in your household belong to or donate money to any environmental organizations?

	Yes	No
Sharon	49%	49%
Stoughton	32%	67%
Canton	50%	44%

Findings from the Public Opinion Survey

NepRWA's goal for the public opinion survey was to gauge awareness and general understanding of water issues, particularly water use and its impact on streams and rivers, within the communities of Canton, Stoughton and Sharon. The information acquired during this process will be used to influence towns to address the water-related concerns of their residents, as well as to provide baseline data for NepRWA's advocacy and outreach activities.

In order to anticipate challenges that might face local communities as concerns about water supply and demand continue to grow, NepRWA utilized the survey to answer the following questions, so that appropriate and useful recommendations and techniques can be presented to towns:

- To what extent do people know about or understand streamflow, water supply and wastewater issues in their town? In general?
- What are people's concerns about water?
- Do people know where their drinking water comes from, where their wastewater goes to, and how streams and rivers are impacted by human water use?
- Do people value the streams and rivers in their town? To whom do people look to protect local streams and rivers?
- Are people willing to conserve water? Are certain people more willing to conserve than others? If so, what would motivate them to do so? Who do people look to for guidance on water conservation?
- What actions would people be willing to take (if any) to protect their local water resources for future use?

The answers to these questions, and many others, will be compared to the results of the interviews with the municipal officials from Canton, Sharon and Stoughton. Together, the results from the two phases of the Community Assessment will be applied towards creating and implementing water conservation programs that can be successfully incorporated into municipal water management programs. The goal of these programs will be to achieve a reduction in excessive water use throughout the watershed to benefit the streamflow levels and aquatic habitats within the Neponset River and its tributaries.

In terms of answering the specific questions related to people's understanding and knowledge of water-related issues, the following points summarize the findings of the public opinion survey.

- People surveyed in the three towns seem to have a competent understanding of water related issues, particularly the relationship between water supply and demand.

- Respondents were united in their concern for having enough water to meet their outdoor needs (i.e. lawn watering), although Stoughton residents worry most about having enough water for indoor uses and Canton residents exhibited the least concern about their town's ability to meet any water needs.
- 70% of all respondents, and 76.8% of those who voted in the last election, think their town leaders should encourage water conservation in order to protect the local tap water supplies.
- Sharon residents have the fewest worries about tap water quality and the highest confidence in the job their town government is doing in maintaining the tap water supply. Stoughton residents are most concerned about tap water quality. Contamination and cleanliness are the top concerns about tap water across all three communities.
- In regards to wastewater disposal, most people do not have an adequate understanding of how the sewer system can negatively impact local water resources, particularly in terms of reducing groundwater and streamflow levels. However, when people learned about the potential for sewer systems to contribute to the draining of local water resources (via inflow and infiltration), nearly 40% said they would prefer to rely on septic systems in order to protect their local environment and preserve water supplies.
- An average of 82.8% of all respondents answered that water quality, water quantity, and fish and wildlife habitat were the most important characteristics of streams, and 66% thought their towns should use available resources to preserve and protect their local streams.
- Over 82% of all respondents thought it was very or extremely important to protect wildlife in and around the Neponset River and its tributaries.
- All three communities are very willing to partake in water conservation at home, especially when their town encourages conservation in order to protect drinking water supplies and local streams and rivers. People will also conserve water if it will save them money, indicating that incentive-based programs within their town would most likely be successful at protecting local water resources.
- People expressed a willingness to take part in several different water conservation techniques like redirecting their downspouts, utilizing less-water dependent plants and shrubs in their landscaping that require less water, replacing toilets with water-saving models, and using a rain barrel to collect rainwater. These techniques should be highlighted within town-wide water conservation programs, as there clearly is an audience willing to take part in such programs if there were town encouragement and benefits such as money saving and environmental protection.

Conclusion to the Community Assessment

Based on the results of the Community Assessment, it is clear that both residents and municipal officials are aware, to varying degrees, of the issues related to streamflow, water supply, and wastewater. However, the results also reveal that in almost all instances, municipal officials seem to substantially underestimate the public's concern for water quality in rivers and streams. Where one municipal official expressed that "as long as water comes out of [citizens'] taps, they are happy with it," respondents of the public opinion survey indicated that they have substantial concerns about the quality of their tap water as well as the water in nearby streams and rivers.

Additionally, municipal officials tended to undervalue the public's willingness to take part in water conservation efforts. One official suspected that local industries use most of the water and thus emphasized that any water conservation campaigns should be directed towards the industrial sector. Yet town and state water-pumping records indicate that the residential sector uses more water. Therefore, any water conservation campaign not specifically directed at residents would eliminate the potential success of protecting local water supplies by encouraging residential water conservation, which, according to the survey results, would be well-received by residents.

Once the results of the community assessment are made available to key stakeholders within the BUDGETS study area, attention by town leaders and state officials should be turned to implementing a residential water conservation campaign and other efforts aimed at reducing consumptive water use. These efforts will benefit the long-term use and protection of water supplies and environmental characteristics within the local communities and the Neponset River Watershed.

Canton

In Canton, the level of environmental awareness, specifically towards water use and the protection of streams and aquatic habitat, can be summarized by the following results from taken from the Community Assessment:

- Municipal officials are concerned about pollution to streams from wastewater contamination. They are also concerned with ensuring the water supply within the town. However, they think residents are more concerned about traffic and growth than about the environment.
- Residents in Canton do not think local streams are as healthy as they should be. They place great importance on water quality and quantity in the streams and want to protect and maintain healthy aquatic habitats.
- In response to how water quality issues should be resolved, one municipal official thought that private companies should be hired to solve problems associated with water quality and quantity in their town because there is a lack of communication between the committees and commissions in town. Also no town department has the expertise to deal with some of the technical issues.

- Most residents in Canton think that their town is doing a good to excellent job managing the town's water resources, and that the municipal officials should be in charge of encouraging water conservation in order to protect the local resources as well as future supplies.
- Municipal officials in Canton think that self-sufficiency in supplying water is important to avoid future MWRA rate hikes. However, Canton has only implemented voluntary outdoor water restrictions during droughts.
- Residents in Canton, more than in any other town surveyed, think it is very or extremely important to conserve water, and that scenic value, water flow, and wildlife habitat are the most important characteristics of local streams.

The municipal officials in the Town of Canton need to acknowledge that its citizenry has many concerns about local water resources. In particular citizens are aware of the need to conserve groundwater and surface water supplies within the town in order to protect the local environment and future use. Furthermore, Canton residents are looking to their municipal officials to bring about this protection so that the scenic value and wildlife habitat provided by local streams can be ensured well into the future.

Canton officials and water managers must also acknowledge that the only way to be less reliant on the MWRA and more sufficient in meeting the town's water needs is to incorporate water conservation into the long-term management scheme for the town. Without education and implementation of residential water conservation, particularly outdoor water conservation, the town will continue to face difficulties in supplying water without severely impacting the surrounding surface water resources. Municipal officials should utilize the information gleaned from the public opinion survey indicating that residents are willing to undertake great efforts to conserve water in order to protect streamflow, water quality, and wildlife habitat.

Other efforts in Canton focusing on groundwater recharge, reducing impervious surfaces, and restoring and protecting aquatic habitat in the Neponset River and its tributaries would also likely be well-received by residents if the same objective of protecting local water resources was communicated.

Sharon

The level of environmental awareness within the Town of Sharon can be summarized by the following results from the Community Assessment:

- The municipal officials in Sharon believe that they have a very enlightened citizenry that values the local environment, specifically Lake Massapoag. However, the Town realizes that residents need to receive further education about the need to reduce lawn watering in order to protect local water resources.

- The residents in Sharon are very confident in the ability of the local water supply to meet their needs for drinking water, but do not feel that the town can completely meet their outdoor watering needs with the current water supplies.
- Municipal officials in Sharon view the sewer system as a means to locate businesses and residential neighborhoods in areas where they otherwise wouldn't go.
- When asked initially, 70% of Sharon residents said they would prefer to be connected to the municipal sewer system. However, once they received an explanation of how inflow and infiltration can affect water supplies and streamflow, 48.6% changed their preference in order to protect groundwater supplies and local streams.
- Municipal officials generally believe that the residents of Sharon view Lake Massapoag and the local ponds as better known and more important than any of the local streams.
- 82% of the respondents from Sharon think that their local streams are in good to excellent condition and generally have higher regard for their local streams than do respondents from Canton or Stoughton.
- Municipal officials in Sharon think that citizens are willing to live with a water management plan, and that outdoor water conservation efforts are making progress. However, they also think that indoor water conservation campaigns need to also be implemented.
- Respondents in Sharon are supportive of indoor water conservation and think that town leaders should encourage water conservation.

Municipal officials in Sharon appear to have a more accurate understanding of the level of environmental awareness of residents in town. The town leaders seem to be particularly conscious of the fact that while residents want to protect their local water resources, there is a disconnect in their ability to relate the need for water conservation to the protection of local streams and wildlife habitat. However, municipal leaders and residents in Sharon are aware that there is difficulty in meeting outdoor lawn-watering demand, which points directly to a need for education about local hydrologic features, availability of groundwater resources for consumptive uses, and the connection to decreasing streamflow and lake levels.

A town-wide education campaign about local streams and water quality and quantity issues would be beneficial toward achieving increased residential participation in water conservation. Residents are proud of their streams and the quality of the environment within the town and would be likely to participate in efforts to protect and enhance those resources. As in Canton, the residents of Sharon are looking to their town leaders for guidance and encouragement about how best to protect and preserve their water resources, particularly Lake Massapoag, for generations to come.

Stoughton

The level of environmental awareness, specifically towards water use and protection of streams and aquatic life within the Town of Stoughton can be summarized by the following results from the Community Assessment:

- Municipal officials do not generally believe that people think in terms of watershed living. They also perceive that it is hard to get a working class community to conserve water, especially if prices continue to rise.
- 72% of Stoughton residents think it is very or extremely necessary for people to conserve water in their homes. The main incentive expressed behind the need to conserve water was to save money on people's water bills.
- Several municipal officials in Stoughton believe that the community is apathetic to water quality and environmental concerns, and that the community could care less about most environmental issues.
- 87% of Stoughton residents often or always attend town meeting, indicating an opportunity to direct people's views and attitudes to reflect a more comprehensive role in watershed living.
- One official in Stoughton said that streams are "off the radar screen" and did not understand why people are so concerned and "uptight" about local streams. Another official perceived citizens' attitudes towards streams and rivers to range from "benign neglect to some pride."
- The residents in Stoughton value conditions of streams and think that the streams within the town are generally good in terms of scenic value and water quality, though they lack sufficient flow and habitat.
- Municipal officials cited Stoughton's insufficient water supply as a result of poor planning and expressed concern that the town's population could not be supported by the municipal water supply.

Residents in Stoughton, as compared to other towns, may be more concerned about their water supply as a result of the decade-long water restrictions that were in place, as well as the rising cost of water within their town. The political climate in Stoughton over the years as a result of their water troubles has definitely contributed to a local population that is extremely sensitive to increased costs of water and the unreliable supply. However, when surveyed, the residents in Stoughton expressed a certain level of concern for the health of the streams in their community as well as the adequacy of their drinking water and their town's ability to protect supplies for future use.

Residents in Stoughton were the least confident in their town's ability to meet indoor water needs. The municipal officials also voiced their uncertainty that the future needs of residents

will be able to be met with the current level of planning and management of the water supplies. While the situation may have changed since the town's recent acceptance into the MRWA water supply system, there clearly needs to be a greater level of long-term water management that incorporates conservation and recharge in order to satisfy demand within Stoughton. Any future water use plan should be communicated to the general public at Town Meeting, where a large representative audience is already present, and should clearly define the goals and benefits of reducing consumptive use (i.e. financial savings and protection of nearby streams and wildlife habitat).

Next Steps

The Community Assessment should prove to be an insightful tool towards understanding the knowledge base and perceptions of watershed residents and local municipal officials of water-related issues, particularly how water is used and how such use impacts the health of the watershed. The information collected from the public opinion survey and the interviews with the municipal officials will greatly aid NepRWA in its ability to work with municipalities to protect and preserve the local water resources, to meet the needs of people and the environment well into the future.

This report will be disseminated to town planners, conservation commissions, water providers and managers, and other key decision-makers within the towns of Canton, Sharon, and Stoughton. As these towns move forward in their roles of providing clean and plentiful drinking water to their residents, and protecting surface and ground water supplies to ensure adequate streamflow and aquatic habitat, the findings of the Community Assessment should be incorporated. At every juncture where decisions are made about water use and demand, municipal officials should weigh heavily the knowledge that residents want clean streams, an abundance of wildlife and scenic places, and an adequate supply of water to meet their needs. Most importantly, municipal officials must consider the findings of the Community Assessment that residents are willing to do their share and follow the guidance of the town in order to protect the Neponset River and its resources for current and future use.