

NRWA Sustainable Water Use Policy

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Preamble and Premises

The water resources of the Nashua River Watershed are vital to its ecology and to the well being of the people who live within it. Those resources are complex and vulnerable and, therefore, their management and use must be based on a full understanding of the watershed system. Below are some of the functions of river and wetland systems and the potential unintended consequences of poor water management.

1. Surface water and groundwater are interconnected. The removal or pumping of groundwater can have significant negative impacts on streamflow and wetland systems.
2. Unnaturally low streamflow concentrates river pollutants, reduces dissolved oxygen, increases water temperatures, and allows sunlight to penetrate to sediments, resulting in weed growth. In addition, low flow conditions can cause increased erosion, loss of bank vegetation and habitat and potentially increase the instability of the physical structure of the river. All of these effects are seriously detrimental to healthy aquatic and riparian systems, coldwater fisheries, and can also negatively affect recreational uses.
3. Streamflow and groundwater levels in wetland areas are naturally lowest in mid summer through early autumn. The highest likelihood of extended drought occurs at this time, corresponding with the highest human water demand when lawn watering demand also peaks.
4. Riparian and instream species have adapted to natural streamflow cycles. Flow regimes may be adversely affected by groundwater withdrawals, the export of wastewater out of a sub basin, rerouting of stormwater runoff and unnatural flow manipulation.
5. Projections of the effects of climate change for this region indicate longer drought periods with lower summer base flows and more extreme weather patterns. Estimates of increased population and commercial and industrial growth indicate increasing demand for water supplies into the foreseeable future. To ensure sustainable growth, adequate water supplies (both in quantity and quality) with appropriate environmental safeguards will need to be addressed.

Sustainable Water Resource Strategies for the Nashua River Watershed

A sustainable water resource strategy requires sensitive water resource management that balances the need of all water users with the need to protect aquatic ecosystems. Listed below are some of the components that should be considered for improved water resource management.

1. Water conservation is a critical component of water management and should be pursued as a top priority. Emphasis should be placed on water conservation

efforts before new sources of water are sought. Strategies should include reasonable caps on per-day residential use, including lawn watering and irrigation, re-use of gray water, low water appliances, and the elimination of water lost to leaking pipes and aging infrastructure.

2. Water withdrawals, both existing and new, should be managed for the restoration and maintenance of stream flows, water levels and hydrologic regimes that are protective of natural aquatic life. Standards protective of aquatic life should be established for a stream or ecosystem potentially impacted, if they do not exist. Water withdrawal management may include demand management, in which a community switches between sources of available water supplies (e.g., away from a small stream in the summer) in order to prevent or reduce impacts to resource areas.
3. All groundwater resources which can potentially provide water supplies should be identified and protected. Municipal water systems should have redundant supply sources, including sources which have limited ecological effects in low flow and drought conditions (for example, micro (rain barrel, cistern, etc.) and macro (reservoirs, artificial aquifer recharge, etc.) storage that can be utilized during summer periods, and/or locating groundwater wells farther from streams to reduce seasonal stream depletion impacts.)
4. A consumption-oriented tiered rate structure for water use is an effective method to promote water conservation. Pricing per water unit should increase as water use increases. Communities should consider targets for per capita water use and have an active incentive program to help residents and businesses use less water.
5. Local development decisions should consider the effects on the watershed's health. Consideration should be given to the impacts of water use, wastewater disposal, and impervious surfaces on streamflow when development and redevelopment decisions are being made. On-site and small wastewater treatment facilities that increase local groundwater recharge should be encouraged, particularly in areas with existing deficits in the local watershed's water budget.
6. Watershed communities should establish regulatory requirements which promote infiltration of water. New development should have no net loss of infiltration. Low Impact Development (LID) techniques that encourage infiltration and reduce runoff should be required. However, recharge should be discouraged where risk of contamination on a site is high. Best Management Practices (BMPs) should be employed to ensure infiltrated water is of the highest quality practicable.
7. The 2004 Massachusetts Water Policy has as one of its Water Resource Management Principles "Keep Water Local" and live within budgets by addressing issues from a watershed perspective. The movement of water into and out of basins should include the consideration of wastewater as well as water supplies.
8. Proposals for new groundwater withdrawals should include plans to offset the development with the induced recharge of stormwater from paved/constructed (i.e., impervious) land surfaces to at least replace the groundwater losses. In

stressed basins, those offsets should be for 2 gallons of recharge for every gallon of water newly withdrawn.

9. Communities should develop a “water budget” as part of their master planning process. This budget should be incorporated in the community’s development policies and goals to assure that growth does not exceed its water resources.
10. Each applicant for a withdrawal permit, including permit renewals, should demonstrate that all feasible means to avoid, or if not possible, to minimize and mitigate impacts of the withdrawal on the natural environment have been taken. Mitigation shall occur in the same sub-basin as the impact to the maximum extent practicable, or within the same basin as the permitted withdrawal for those stream flow impacts that cannot be offset in the same sub-basin.

NRWA Water Withdrawal Policy

The withdrawal of water for any use must be based on a full understanding of potentially affected streamflows and ecology, including cold water fisheries and riparian ecosystems, as well as on the current and anticipated future water needs of the watershed communities. Withdrawals for use outside the watershed should occur only after demonstration that existing and future needs within the watershed will be met.

1. Safe yield criteria that protects the major features of the natural streamflow regime should be established for all wells.
2. All new and proposed water withdrawals should be evaluated for their potential to affect base flow, unnatural variation of flows, and induced infiltration. Existing wells should be evaluated for the same at permit renewal.
 - a. Pumping rates should be linked to natural variations in stream flow of the stream potentially impacted by pumping.
 - b. Natural flow regimes should be maintained; however, when this is not possible, flows should not drop below existing state standards or guidance.
 - c. Flow-induced triggers should be used to institute stepped-up community-wide conservation measures when stream flow falls below the natural flow regime or state standards or guidance.
 - d. Surface and Groundwater withdrawals should be given the same level of scrutiny and analysis when evaluating permitted and registered withdrawals. Water budgets should be analyzed on a sub basin scale (i.e., within the same sub basin as to the withdrawal site and potentially impacted stream).
 - e. All groundwater and surface water withdrawals that affect a given portion of the watershed should be addressed together when evaluating permitted and registered withdrawals.

- f. Impacts of Registered (i.e. grandfathered) withdrawals should be evaluated the same way that permits are evaluated. New policies can be developed aimed at restoring adequate flows in systems that have been over-allocated.
- 3. All new and existing groundwater withdrawals should be conducted in a way that provides for the greatest protection of healthy aquatic ecosystems, particularly native coldwater fisheries. Monitoring of streamflow, temperatures (especially of cold water fisheries), wetlands and groundwater conditions should be an integral requirement of all new and existing water withdrawal permits. Communities should have a source management plan that enables adaptive management of their existing water sources to minimize their environmental impacts based on the results of their flow and ecological monitoring programs.
- 4. All new or proposed water withdrawals that result in a permanent removal of the water or wastewater from the sub-watershed (interbasin transfer) should only be approved after a thorough streamflow study of the donor basin and the highest assurances that there will be no adverse effect from the withdrawal on the environment.
 - a. Transfers should be approved only after all other available measures (including conservation) in the receiving basin have been implemented.
 - b. Consideration should be given to offsetting any interbasin transfer with additional stormwater or wastewater recharge projects in the donor basin.
 - c. Municipalities with water and/or sewer systems that span watershed boundaries should be mindful of the potential impacts of moving water and wastewater from one sub-basin to another, especially with regard to expansion of water and wastewater systems into new areas. An evaluation of the implications of moving water should be conducted to minimize impacts.