



THE COMMONWEALTH OF MASSACHUSETTS
WATER RESOURCES COMMISSION
100 CAMBRIDGE STREET, BOSTON MA 02114

**REPORT OF THE FINDINGS, JUSTIFICATIONS AND DECISION
OF THE WATER RESOURCES COMMISSION
Relating to the Approval of the
Littleton Electric Light and Water Department's
Request for an Interbasin Transfer
Pursuant to M.G.L. Chapter 21 § 8C**

DECISION

On September 12, 2024, by a nine to zero (9-0) vote with one abstention, the Water Resources Commission (WRC) approved, with Conditions, the Littleton Electric Light and Water Department's request for a water supply connection with Boxborough, which will facilitate an interbasin transfer of 0.060 million gallons per day (MGD). This vote was taken after review of the facts provided by the applicant, analysis of the associated data, and consideration of public and agency comments received concerning this proposal.

INTRODUCTION

On May 7, 2024, the Massachusetts Water Resources Commission (WRC) received a request from the Littleton Electric Light and Water Department (LELWD) for approval of an action to increase the present rate of interbasin transfer under the Interbasin Transfer Act (ITA) (M.G.L. Chapter 21 §§ 8B-8D) as part of a Single Environmental Impact Report (SEIR) and supplemental filing submitted to the Massachusetts Environmental Policy Act (MEPA) Office. The proposed project includes a new 0.529 million gallons per day (MGD) water supply well (Taylor Street Well¹) and pumping station in Littleton for the LELWD, connection of the new water supply well to a water treatment plant in Littleton via a raw water transmission main, and construction of a finished 4.5 mile 12- to 8-inch diameter water main from the LELWD system to bring a treated water supply to properties within the Town of Boxborough. The Secretary's Certificate on the SEIR was issued on May 17, 2024. The WRC accepted LELWD's application as complete at its June 13, 2024 meeting.

LELWD is proposing to transfer a maximum of 0.065 MGD of water, 0.060 MGD of which is subject to review under the ITA, to properties in the Town of Boxborough that are experiencing contamination of per- and polyfluoroalkyl substances (PFAS), sodium, and chloride in their existing on-site water supplies. This interconnection triggers the ITA because Littleton's sources are located in the Merrimack River Basin, and Boxborough has land area in the Concord (aka SuAsCo) and Merrimack River Basins. Wastewater from these properties in Boxborough is discharged on-site.

¹ The Taylor Street Well is also known as the Trumbull Well.

The maximum transfer of 0.065 MGD from LELWD to properties in Boxborough is limited by an Inter-Municipal Agreement (IMA) between the two towns. The maximum hydraulic capacity of the proposed 8-inch finished water main is expected to be approximately 850 gallons per minute (gpm) to support potential fire flow demand as modeled at the southern terminus of the water main with a 20 pound per square inch (psi) residual pressure in the main. Fire flow would only occur during an emergency condition and is not anticipated to last for an entire day. A significant 4 hour, 850 gpm fire flow demand occurring at the southern terminus of the water main in Boxborough would be approximately 0.2 MGD. However, typical fire events are far less than 4 hours in duration. Although the capacity of the new pipe is greater than 0.065 MGD, the maximum daily flow will be limited by the IMA.

A summary of the facts described in the application is as follows:

1. Littleton's sources are located in the Merrimack River Basin.
2. Boxborough does not have a municipal water supply.
3. Properties in the Town of Boxborough are experiencing contamination of PFAS, sodium, and chloride in existing water supplies.
4. Areas of Boxborough to be served by LELWD are in the Merrimack River Basin and the Concord River Basin.
5. As a portion of the area to be served in Boxborough is in the Merrimack River Basin, only the portion of water that will be serving properties located in the Concord River Basin (maximum transfer of 0.060 MGD) is subject to the ITA.
6. A MEPA environmental review, pursuant to M.G.L. c. 30, §§ 61-62I, was required for this proposed action. The ITA application was submitted as part of the SEIR for this project (EOEEA #16736) followed by a supplemental filing with MEPA. Additional information for ITA review was requested during the MEPA process and provided by LELWD.
7. The Secretary's Certificate on the SEIR was issued on May 17, 2024, stating that no further MEPA review was needed.
8. Two required public hearings were held virtually via Zoom to take comment on this application, for the donor basin on July 24, 2024 and for the receiving basin on July 25, 2024. Written public comments were accepted until August 1, 2024 and were supportive of the project.
9. A Staff Recommendation to approve the request was presented to the WRC on August 8, 2024.
10. A public hearing on the Staff Recommendation was held virtually via Zoom on August 15, 2024. Written public comments were accepted until August 22, 2024 and none were received.

EVALUATION OF THE PROPOSED INTERBASIN TRANSFER

This Interbasin Transfer application was reviewed on its own merits and is applicable solely to LELWD's transfer of water supply to Boxborough in the amount of 0.060 MGD. This Decision is made based on facts contained in LELWD's MEPA submissions and additional information submitted at the WRC's request during the MEPA process and during staff review. The application was evaluated against the seven Criteria outlined in the ITA regulations (313 CMR 4.09), as well as the ITA Performance Standards and with consideration of comments received from the agencies and through the public comment process.

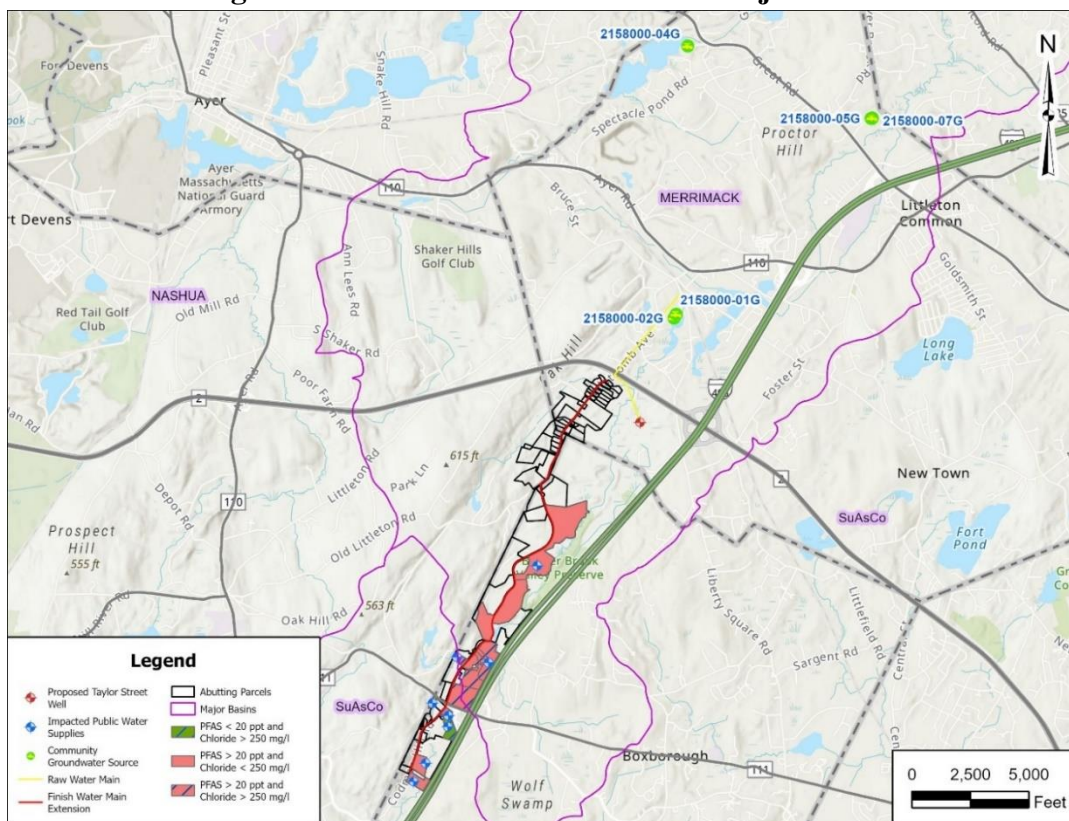
SYNOPSIS OF THE EVALUATION CRITERIA (313 CMR 4.05)

Criteria	Application Meets?
Criterion #1: MEPA Compliance	Yes
Criterion #2: Viable In-Basin Sources	Yes
Criterion #3: Water Conservation	Yes, with conditions
Criterion #4: Forestry Management	Not Applicable
Criterion #5: Reasonable Instream Flow	Yes
Criterion #6: Impacts of Groundwater Withdrawals	Yes, with conditions
Criterion #7: Cumulative Impacts	Yes

BASIS FOR THE WRC DECISION

This application was reviewed by Executive Office of Energy and Environmental Affairs (EEA), WRC staff at the Department of Conservation and Recreation's (DCR) Office of Water Resources, Department of Environmental Protection (MassDEP), and Department of Fish and Game's (DFG) Division of Fisheries and Wildlife (MassWildlife) and Natural Heritage and Endangered Species Program. This Decision was made after an evaluation of LELWD's application and compliance with the six applicable Criteria of the ITA regulations and the ITA Performance Standards. The following section describes in detail compliance with the Criteria.

Figure 1: LELWD's Sources and the Project Area



Criterion #1: Compliance with MEPA

An environmental review, pursuant to MEPA (M.G.L. c. 30, §§ 61-62I) and the MEPA regulations, 301 CMR 11.00, was required for this proposed transfer. The ITA application was submitted as part of the SEIR for this project (EOEEA #16736) and a supplemental filing with MEPA. The SEIR was submitted in April 2024 and the supplemental filing was received by WRC staff on May 7, 2024. The SEIR Certificate was issued on May 17, 2024 and stated that no further MEPA review was necessary.

Criterion #2: Viable In-Basin Sources

LELWD was required to demonstrate that all reasonable efforts have been made to identify and develop all viable sources in the receiving area (Boxborough). Multiple studies have been completed for the Town of Boxborough in an effort to mitigate the PFAS, sodium, and chloride contaminated groundwater sources currently serving 11 small public water systems (PWS) including 1,100 residents living in condominiums representing about 20% of the town. Alternatives have been evaluated in the receiving basin, including drilling individual replacement wells for each PWS, adding enhanced treatment for each PWS, and exploring other sources within Boxborough. However, none of these alternatives was deemed an acceptable solution that would provide the capacity needed. Based on the information in the completed studies, providing suitable drinking water from the existing water supply sources in Boxborough is a challenge due to contamination, technical feasibility of treatment, and financial constraints. Following is a summary of all issues considered relating to viability.

Sources within the Town of Boxborough

The only source of water that would avoid an interbasin transfer would have to be located within Boxborough, as the Town has land area in two basins. The ITA regulations allow a city or town with land area in multiple basins to supply itself with water, as long as the water does not cross a municipal boundary. Boxborough does not have a municipal water supply or any associated infrastructure. Groundwater in and around Boxborough has elevated levels of sodium and chloride ions associated with the storage and use of road salt. The elevated levels of sodium and chloride not only affect water taste and quality but also pose risks to individuals on sodium-restricted diets and can lead to infrastructure corrosion. For example, the Boxborough Executive Office Center, like several of the PWS wells in Boxborough, has excessive levels of sodium (1,295 mg/L) and chloride (1,500 mg/L) well above the Office of Research and Standards Guideline (ORSG) of 20 mg/L and the Secondary Maximum Contaminant Level (SMCL) of 250 mg/L, respectively. This PWS has also exceeded the action levels for lead and copper on numerous occasions since 2011. The high levels of both sodium and chloride are likely contributing to the corrosiveness of drinking water, enabling the persistent lead and copper action level exceedances. In addition, PFAS are present in these water supplies. Per MassDEP, ten of the 11 impacted PWS in Boxborough have PFAS levels exceeding MassDEP's maximum contaminant level (MCL) of 20 parts per trillion (ppt). The PWS exceeding the standards are currently providing bottled water to reduce exposure of the contaminants to the consumers. Bottled water is a temporary short-term solution until a long-term solution is available.

A study completed in 2002 summarized the existing hydrogeological data for Boxborough and recommended sites for municipal test well exploration in overburden deposits and bedrock. Test well exploration was conducted in 2006 at several locations in town. The conclusions of the

study suggested that the most favorable results were found from the overburden drilling on land owned by the Harvard Sportsmen's Club, located in the northwest corner of Boxborough. Based on preliminary testing, it was estimated that a single gravel-packed production well could yield 500-700 gpm or more. The Harvard Sportsmen's Club location is in the same aquifer as Littleton's proposed Taylor Street Well but further upgradient in the watershed. Due to the location, the upgradient recharge would be significantly less than the Taylor Street Well, potentially creating a larger ecological impact to associated wetlands at the same withdrawal volume. In addition, there is no existing municipal water infrastructure or treatment plant in Boxborough to which this potential well could connect.

Alternatives Analysis

An alternatives analysis was performed to identify, evaluate, and select potential water supply alternatives to provide a treated water supply to eleven small public water systems (PWS) in Boxborough that are currently impacted by PFAS, sodium, and chloride. Four alternatives, including a no-action alternative, for water supply were reviewed. Methods for providing water supply included implementing additional treatment for existing sources, bringing new sources online, and an interconnection with Littleton or surrounding towns.

Alternative 1: No Build

Under this alternative, no construction would occur. While there would be no impacts to wetland resources, the impacted PWS would not be provided with an alternative water supply and would continue to suffer serious water quality issues. The residents would not have access to drinking water that meets all of MassDEP's Drinking Water Standards and Guidelines.

Alternative 2: Drill Individual Replacement Wells for each PWS

Under this alternative, each individual PWS would have a new source of supply drilled and the contaminated wells could be abandoned. Replacing the water supply sources on the same property to develop a source that is not contaminated is not an option due to 1) lack of enough property for the Zone I wellhead protection area and setbacks from the Title V septic systems, 2) the bedrock aquifer in which the sources would need to be developed is contaminated with PFAS, sodium and chloride. Due to the extent of the contamination in the local aquifers, replacement wells would likely need to be drilled in different geological formations, which may require thousands of additional feet of water main to be constructed for each system. In addition, there is no guarantee of water quality in the short or long term at the replacement wells.

Alternative 3: Add Treatment to each PWS

Under this alternative, each individual PWS would be updated to include treatment for the contaminants of concern and the new well would not be constructed in Littleton. Treatment systems for the contaminants of concern require significant infrastructure, operations and maintenance, and produce individual waste streams that may negatively impact the environment. Reverse osmosis (RO) would be the only feasible treatment for treatment of sodium and chloride contamination. This treatment process, which is costly and energy-intensive, produces a concentrated waste stream that would ultimately be disposed of through underground injection. The discovery of the PFAS contamination in the area groundwater complicates the viability of this treatment alternative, as the concentrations of PFAS within the waste streams of each individual system will limit disposal options. Treatment of PFAS in drinking water for each of

the impacted PWS is typically achieved with the use of Granular Activated Carbon (GAC) filters, which can be expensive for individual point of entry treatment and further complicated by the need to treat for other constituents. The treatment of these contaminants individually at each source is technically challenging and cost prohibitive.

Alternative 4: Municipal Interconnection

Under this alternative, the impacted PWS would be connected to a nearby municipal water system. Systems within 1 mile of the impacted PWS were considered due to feasibility of design and construction of the project.

The Town of Harvard operates a small system with approximately 98 service connections that is served by two wells and has a third well for emergency supply. This system has no treatment and does not have capacity to connect the impacted PWS. Harvard's municipal sources are located in the Nashua River Basin so this option would not avoid an interbasin transfer. This system was not considered further for an interconnection.

LELWD operates a water system serving residents in Littleton. LELWD has recently completed construction of a water treatment plant (WTP) at Whitcomb Avenue with a capacity of 1.8 MGD to treat water from its groundwater wells for PFAS as well as other contaminants. LELWD has also been conducting hydrogeological testing and investigation over the past 35+ years to locate a new well source to provide additional redundancy within their system. With the addition of the Taylor Street Well to the system, and the treatment capacity at the Whitcomb Avenue WTP, LELWD will have the additional supply necessary to provide treated water to the PWS in Boxborough.

Interconnection with LELWD

Littleton's water system has the necessary infrastructure that can be extended to serve Boxborough, thereby reducing the need for significant new infrastructure investments in Boxborough. The interconnection leverages existing resources, economies of scale, and state funding opportunities (such as grants and loans with favorable terms), which can alleviate the financial burden on Boxborough's residents. The Town of Boxborough is designated as an Environmental Justice Population. Interconnecting with Littleton's water system reduces the need for extensive new construction and the associated disturbance. Furthermore, it supports community health by resolving the current contamination issues more rapidly and effectively than alternative solutions could. In summary, the interconnection with Littleton is considered the best option due to its immediate impact on improving water quality, cost-efficiency, technical feasibility, regulatory support, and long-term sustainability benefits, providing a comprehensive solution to Boxborough's pressing water supply challenges. MassDEP concurs with the Proponent's viability criteria assessment outlined in the May 2024 supplemental MEPA filing that identified the LELWD interconnection as the preferred alternative.

In conclusion, the basic requirement of the ITA is that an applicant shows that local water supply sources are used to the maximum extent possible and that other sources cannot be reasonably developed prior to the applicant obtaining permission to transfer water from out of basin. Given the above-described conditions, the WRC determined that all reasonable efforts have been made

to identify and develop all viable sources in the receiving area of the proposed interbasin transfer.

Criterion #3: Water Conservation

Background on LELWD's System

According to Littleton's June 2024 Water Loss Control Plan, "the Littleton Water System services approximately 9,645 residents through 3,058 residential service connections and 284 commercial/industrial service connections. Annual residential usage accounts for approximately 0.45 million gallons per day (MGD) and annual commercial/industrial usage accounts for approximately 0.53 MGD. Patriot Beverages is the most significant user in Littleton's water system, with annual usage in 2023 at this facility alone accounting for about 35% of the total distribution system demand."

Below is a table showing LELWD's average and maximum withdrawals over the past five years. The data were sourced from the MassDEP Water Management Act (WMA) 2024 draft permit amendment and LELWD's Annual Statistical Reports (ASRs).

Year	Annual Average Daily Withdrawal (MGD)	Maximum Daily Finished Water Consumption from ASRs (MGD)
2023	1.16	1.74
2022	1.13	2.03
2021	0.98	1.75
2020	0.90	1.70
2019	0.90	1.79

Although the receiving area is in Boxborough, LELWD will be responsible for operating and maintaining the water supply system and billing the Boxborough residents directly. Therefore, LELWD was required to demonstrate that all practical measures to conserve water have been taken. The WRC water conservation performance standards are numbered below, followed by a bulleted narrative of LELWD's actions.

1) A full leak detection survey should have been completed within the previous two years of the application. The proponent should provide documentation regarding repair of leaks identified during the survey.

- LELWD currently conducts a leak detection survey of the entire distribution system every year.
- The last system-wide leak detection survey was completed in August 2023. Documentation of the survey and leaks repaired was provided. Another leak detection survey is intended to be performed in the fall with completion by the end of 2024.
- Any time a leak is detected in LELWD's system, whether reported by a customer, noticed by a contractor or LELWD staff, or documented via leak detection surveys, the leak is repaired as promptly as feasible to control water loss.

- As LELWD will be responsible for maintaining and repairing the Boxborough water main extension, the current successful leak detection practices will be extended to this new portion of its system.

2) The water supply system should be 100% metered, including public facilities served by the proponent. A program of meter repair and/or replacement must be in place. Documentation of annual calibration of master meters and a description of the calibration program should be included in the application.

- All service connections to LELWD's distribution system are metered using an automated meter reading system that allows consumption and status data to be collected in real-time without the need for manual reads.
- LELWD has a meter repair/replacement program that services meters based on the AWWA standards and is funded through an annual budget appropriation.
- LELWD hires a third-party calibration company to perform annual calibrations of all raw and finished water master meters.
- LELWD recently completed (over the course of eight years) a full-system replacement of all residential meters and is currently about halfway through a commercial meter replacement program.
- LELWD's Advanced Metering Infrastructure (AMI) system gives access to all commercial and residential water use data in near real-time. This allows investigations of any high usage, and the ability to locate customers that are using irrigation systems based on graphs, tables, and other data management tools. The AMI system is linked to GIS, which allows operators to look at water usage in the field when conducting patrol for outdoor water use restriction violations. The AMI system also has features that alert LELWD staff of high water consumption or signs of leakage in connected buildings.
- All new service connections in Boxborough will be metered and connected to the AMI system, and will be included in the meter repair/replacement program.

3) Unaccounted-for Water (UAW) should be 10% or less. The proponent should provide documentation of UAW, in both gallons and percentage of the total finished water entering the distribution system, for each of the past five years. The definition of accounted-for and UAW for use in Interbasin Transfer applications is given in Appendix C of the Performance Standards.

- From 2019 through 2023, UAW has been above 10%, ranging from 11%-16% with an average of 13%. The 2018 MA Water Conservation Standards require that water suppliers should meet or demonstrate steady progress toward meeting the 10% standard, and MassDEP has required a Functional Equivalence Plan.
- LELWD received a WMA Grant for 2014-2015 to build on a prior planning study and conduct a water audit and leak detection survey to develop water loss control strategies. LELWD received an M36 Water Audit grant in 2017 and again in 2022.
- The last M36 Water Audit was completed in 2023 using 2022 data with a Level 2 Validation along with a Water Research Foundation Real Loss Component Analysis. The audit had a data validity score of 68, and both the audit and component analysis generated recommendations for improving the quality of data collected and recommendations for reducing water losses in the system. Recommendations from the audit and component analysis were incorporated into LELWD's 2024 Water Loss Control Plan along with additional water loss reduction strategies, and LELWD's existing

water loss control measures and activities. The Plan includes start and/or completion dates over the next two years for many of the actions, and includes a statement that it will be updated with the most relevant information each year after the annual audit.

- LELWD must continue with the implementation of its 2024 Water Loss Control Plan including completing the recommended actions from the 2023 audit, continuing annual audits starting with the 2023 data, and updating the Water Loss Control plan to include the Boxborough extension and annually with the most relevant information and plan implementation progress to gain compliance with the UAW standard.

4) The proponent should provide documentation to show that there are sufficient sources of funding to maintain the system, including covering the costs of operation, proper maintenance, proposed capital improvements, and water conservation. The rate structure must encourage water conservation.

a) Sufficiency of Funds

- LELWD's customer charges cover all costs of the system, including operation, maintenance, capital needs, source protection, debt service, administration, regulatory compliance, and water conservation. LELWD uses a 25-year planning horizon in its Capital Improvement Plan.

b) Strength of Water Rate Conservation Signal

- LELWD's pricing structure is the same for all customer types. The volume thresholds were set at 5,000 gallon per month blocks because their average residential customer in town uses 5,000 gallons per month or less. This helps LELWD stay below 65 residential gallons per capita per day (rgpcd). The rate increases of an additional 25% for every additional 5,000 gallons per month of usage is an incentive to reduce water use. While their tiers 3-5 are only hit by 11% of customers, the strength of their bottom two tiers allows this rate to send a strong conservation signal.

5) The proponent should bill its customers at least quarterly based on actual meter readings. Bills should be easily understandable to the customer (e.g., providing water use in gallons and including comparison of the previous year's use for the same period).

- LELWD bills all customers on a monthly basis.
- The LELWD bills provide water use in gallons and show usage trends. The usage tier applicable to the bill is shown, but the other tier rates and the volume thresholds are not shown. This information would improve a customer's understanding of how their water use affects their charges. To increase the effectiveness of the existing price signal, showing the full rate structure (tier volumes and unit charges) on the bill is suggested.

6) A drought/emergency contingency plan, as described in 313 CMR 4.02, should be in place. This plan should include seasonal use guidelines and measures for voluntary and mandatory water use restrictions and describe how these will be implemented. There should be a mechanism in place to tie water use restrictions to streamflow and/or surface water levels in the affected basin(s) where this information is available.

- LELWD revised its local drought management plan in April 2024.

- LELWD's drought plan states that whenever a drought advisory or higher is declared by the Massachusetts Drought Management Task Force, Littleton will take the appropriate actions corresponding to the drought stage level. Littleton falls within the Northeast Drought Region. LELWD's outdoor water use restrictions follow the MA DMP's guidance, and there is a bylaw for enforcement, but this only applies to municipal use. Implementing a private well bylaw to regulate private well use during droughts is suggested.
- Per the IMA, any water use limitations or restrictions will apply equally to connected properties in Boxborough.
- LELWD's drought plan includes quantitative thresholds that incrementally signal drought severity and describes the associated water efficiency response actions, but does not provide information on water supply response actions. LELWD must expand the drought plan by including water supply thresholds, frequency of threshold monitoring, and water supply response actions associated with thresholds such as activating emergency sources/connections.
- LELWD's drought plan does not include the names or contact info of the staff responsible for implementing the plan. LELWD must add a section that discusses the staff involved with drought monitoring, preparedness, and response, and providing their contact information.

7) All government and other public buildings under the control of the proponent should have been retrofitted with water saving devices. Proponents should provide records of water audits conducted on public facilities, the most recent of which should have occurred within the prior two years.

- Although LELWD is a municipal electric and water department, it is not a municipality and it is under the authority of independently elected boards. It does not have the authority to regulate or enforce water audits and plumbing inspections in municipal buildings. However, LELWD works well with other town departments and is typically successful in gaining voluntary cooperation. It is recommended that LELWD continues its efforts to work with the Town of Littleton to the extent possible to encourage the installation of these water-saving devices.
- No municipal facilities/buildings located in Boxborough will be receiving water from the LELWD connection.

8) If the community's residential gallons per capita per day (rgpcd) is greater than 65, the proponent should be implementing a comprehensive residential conservation program that seeks to reduce residential water use.

- LELWD's rgpcd has been below 65 for more than the past five years. The five-year average is 52 rgpcd.
- LELWD must continue its successful work in this area and extend its efforts to the properties in Boxborough to be connected, to maintain rgpcd below 65.

9) A broad-based public education program, which attempts to reach every user at least two times per year, through such means as mailings, billboards, newspaper articles, cable television announcements or programs, or the use of other media, should be in place.

- LELWD participates in a public education program to promote water conservation and awareness (e.g., nonessential outdoor water use), including information enabling customers to calculate their water use; usage history; rebates on water-efficient plumbing fixtures and appliances; information on water-wise landscaping, gardening, efficient irrigation, and lawn care practices; a water conservation information center, and public service announcements or announcements in other media. Bill stuffers are used during drought conditions.
- During the summer, posting about water conservation on Facebook and Instagram is frequent. The Consumer Confidence Report, which is typically sent to all customers served by LELWD in mid-June, includes a section about water conservation and best practices.
- All LELWD outreach and education materials will be extended to new customers in Boxborough when the water main extension is installed. The LELWD already serves the entire Town of Boxborough for electricity, and all of these customers receive a bi-monthly newsletter titled "Watts & Drops," which details current activities in both the Light and Water Departments. Watts & Drops frequently includes information on water conservation in the summer, to remind customers of their impact on water availability and supply during the highest usage period of the year. These efforts, in addition to other public education efforts currently underway for existing customers, will be extended to all Littleton and Boxborough residents connected to the water system in the future.
- LELWD's website includes a "Conservation and Environmental Programs" section with some information about precipitation monitoring, conservation tips, water efficient products, and water use restriction regulations. <https://www.lelwd.com/conservation-and-environmental-programs/>
- It is recommended that LELWD also link to the state water conservation website (<https://www.mass.gov/conservemawater>) and use those resources for more targeted water conservation tips, tools, and messaging.

10) A program which identifies and ranks all industrial, commercial, and institutional (ICI) customers according to amount of use and requires regular contact with the largest users to promote water conservation, should be in place. Materials on water reuse and recirculation techniques should be provided, where appropriate.

- Littleton has just over 280 commercial or industrial metered service connections out of a total of over 3,300 connections. As of 2023, 53% of all water usage in the LELWD system was by ICI entities. Sixty four percent of ICI use in 2023 was by the top eight users, and 56% was by one ICI entity.
- LELWD maintains a list of the top users in case of a water supply emergency where any ICI usage may need to be curtailed to ensure satisfactory water capacity is available during times of supply shortages or high demand. LELWD also provides a historical monthly breakdown of water usage with each monthly bill received by ICI customers. Lastly, LELWD's tiered rate structure is specifically designed to contain a higher rate tier that provides a significant incentive to reduce water use for those commercial customers who use large volumes. ICI outreach/analysis will also apply to new Boxborough customers.

- LELWD has not implemented a formal conservation program for ICI customers; however, all customers are required to follow the standard nonessential outdoor water use restrictions detailed in LELWD's WMA Permit.
- LELWD should continue to monitor water use on its metering system for high usage and suspected leaks and notify the users as needed. LELWD must more proactively reach out to the top users to direct them to the Commercial Buildings page of EPA's WaterSense website (<https://www.epa.gov/watersense>) that has information regarding conservation strategies applicable to ICI users to help emphasize the importance of water conservation and encourage the same. Further exploration of ICI conservation activities including those described in LELWD's 2024 Water Conservation Plan is also recommended.

11) A program of land use controls to protect existing water supply sources of the receiving area that meets the requirements of MassDEP should be in place.

- The Town of Boxborough does not have any existing municipal water supply sources.

12) There should be a long-term water conservation program, which conforms with the 2018 Water Conservation Standards for the Commonwealth of Massachusetts and is informed by analysis of LELWD's water use data. The program should include but not be limited to an indoor and outdoor component, a water loss control program, and the development of water rates that provide incentives for water efficiency. The program should also include a public outreach and education component. The program should be documented in written form and updated regularly or at a minimum after each significant drought event.

- LELWD completed a written water conservation plan in May 2024 which was submitted at WRC staff's request. It is recommended that LELWD review and update this plan as needed.
- LELWD must continue to implement its water loss control plan to gain compliance with the UAW standard, and review and revise the plan annually as specified in the plan, in accordance with additional audit results and standard industry best management practices. The WRC notes and supports LELWD's commitment to conducting annual audits as outlined in LELWD's Water Conservation Plan and LELWD's Water Loss Control Plan to continue to control water loss.
- Review of the SEIR and supplemental information, in addition to the information evaluated above in performance standards 1 through 10, indicates that this standard is largely met, except for compliance with the UAW standard, the inclusion of water supply thresholds and response actions and staff contact info in LELWD's drought plan, and ICI outreach, all of which are specified as Conditions in this Decision.

Notwithstanding the above assessment, the WRC recognizes that in certain cases, local conditions may prevent a proponent from meeting or exceeding the "yardstick" that has been described in ITA guidance, even after a substantial effort has been made. In these cases, the proponent should explain why that standard cannot be met, demonstrate an alternate method of meeting the intent of the standard, and document any efforts that have been undertaken in order to comply with the standard.

Summary of Water Conservation Criterion

Based on the information evaluated in performance standards 1 through 12 above, the WRC finds that the water conservation Criterion of the ITA will be met upon implementation of conditions.

Criterion #4: Forestry Management Program

This Criterion requires that a comprehensive forestry management program has been implemented on any watershed lands with surface water sources serving the receiving area (Boxborough) and under the control of the receiving area. Boxborough does not have any municipal water sources; therefore, this Criterion is not applicable to this proposal.

Criterion #5: Reasonable Instream Flow and Criterion #7: Cumulative Impacts

LELWD is proposing to transfer up to 0.065 MGD of water to properties in Boxborough, 0.060 MGD of which is subject to the ITA. Criterion #5 requires that “reasonable instream flow in the river from which the water is transferred is maintained”. In addition, per Criterion #7 the WRC must consider the “cumulative impacts of all past, authorized or proposed transfers on streamflows, groundwater, lakes, ponds, reservoirs or other impoundments in the Donor Basin and relevant sub-basins”.

The ITA regulations (313 CMR 4.09(3)(e)) direct the WRC to consider “the impact of the proposed action to increase the Present Rate of Interbasin Transfer on the streamflow dependent ecosystems and water uses and the potential to affect instream values” in making its decision to approve or deny an Interbasin Transfer request. In this case, the WRC evaluated the impacts of transferring 0.060 MGD from Littleton’s water supply sources, which are located in the Merrimack River Basin. In addition, the cumulative impacts of the LELWD transfer combined with another approved interbasin transfer were evaluated (Woodlands at Laurel Hill²). This interbasin transfer of up to 15,080 gpd was determined in 2006 by the WRC to be Insignificant. In its analysis of these Criteria, the WRC relied on data and information provided in preapplication meetings, in the LELWD SEIR and supplemental MEPA filing, information and documents provided by MassDEP and MassWildlife, and previous ITA reviews and WRC Decisions. Streamflow data for the analysis were obtained from the U.S. Geological Survey (USGS).

Background

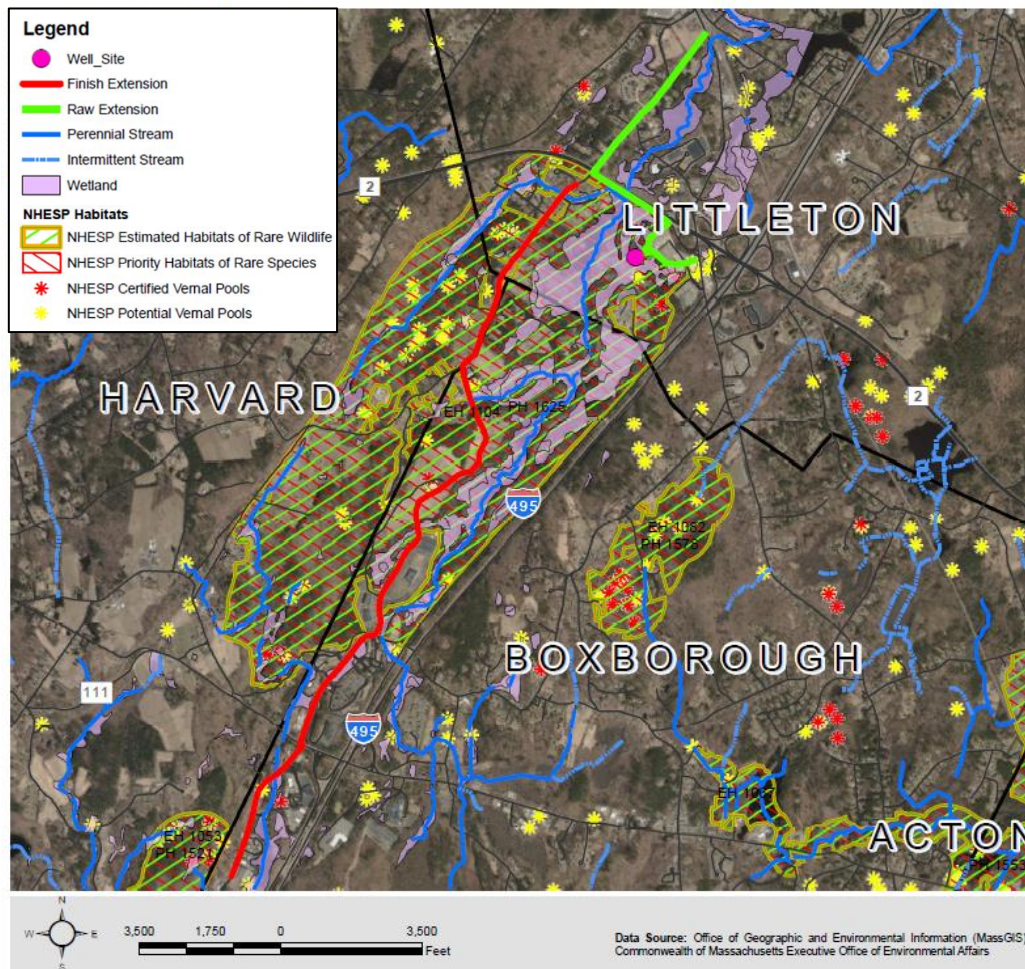
LELWD has a total of six existing groundwater sources and one proposed groundwater source. The Whitcomb Wells, the Beaver Brook Wells, and the proposed Taylor Street Well, are all adjacent to Beaver Brook at different locations within town, with the proposed Taylor Street Well the farthest upstream. The Spectacle Pond Well is on the shore of Spectacle Pond in the Gilson Brook subbasin. LELWD currently has an authorized volume of 1.46 MGD, which includes a 0.83 MGD registration. The Taylor Street Well will be an additional source and the draft MassDEP WMA permit amendment does not add volume to LELWD’s existing WMA authorized volume. The proposed increase in the present rate of interbasin transfer of water is a small percentage of each of the existing wells’ volumes contributing to the transfer.

² In 2006 the WRC approved a Request for Determination of Insignificance for the Woodlands at Laurel Hill, for a transfer of 15,080 gpd from Littleton’s sources to a development in Westford in the Concord River Basin.

Well Name	PWS Source ID Code	Location
Whitcomb Wellfield #3	2158000-08G	Beaver Brook subbasin
Whitcomb GP Well #1	2158000-02G	Beaver Brook subbasin
Spectacle Pond Well	2158000-04G	Gilson Brook subbasin
Beaver Brook Well 2.1	2158000-05G	Beaver Brook subbasin
Beaver Brook Well 2.2	2158000-06G	Beaver Brook subbasin
Beaver Brook Well 2.3	2158000-07G	Beaver Brook subbasin
Taylor Street Well	2158000-XXX	Beaver Brook subbasin

Both Beaver Brook and Gilson Brook drain to Forge Pond, which is drained by Stony Brook, which flows to the Merrimack River. According to MassGIS, there are marsh and wooded marsh wetlands along Beaver Brook and in and around Spectacle Pond, including in areas where the existing wells and proposed well are located. Certified Vernal Pools, Potential Vernal Pools, NHESP Priority Habitats of Rare Species, and NHESP Estimated Habitats of Rare Wildlife are also located in these areas (see Figure 2).

Figure 2: LELWD's Sources and the Project Area



The outlet of Forge Pond was selected as a point of reference for analysis of the impact of the proposed transfer on streamflow. This is the first downstream point from the donor basin wells where the combined effects of groundwater withdrawals in the two subbasin streams could be analyzed.

Mean daily flow in Stony Brook was synthesized from mean daily flow data at the USGS gage on the Squannacook River in West Groton, Massachusetts, as there is no gage on Stony Brook. Mean daily discharge at the outlet of Forge Pond was determined by multiplying the Squannacook data by a scaling factor of 0.36 to account for the differences in basin size. The mean daily flow that would result from the requested transfer was calculated by subtracting the requested transfer amount plus the Woodlands previously approved amount from the synthesized flow data. The percent reduction in flow was calculated. The percent reduction was at most 16% during the drought of record in the 1960's and at most 9.25% during the 2016 drought with a median value of 0.45% using a period of record from 1964-2023.

In evaluating the potential effects on low flows during droughts, it is important to note that Criterion 5 says the WRC shall take into consideration "Effects on flood flows, intermediate flows and low flows, considering existing flow alteration". Stony Brook has been previously impacted by development, groundwater withdrawals, and impoundments. MassDEP has categorized the source water subbasins of LELWD as highly impacted by groundwater withdrawals.

Previous Streamflow and Minimization Studies

Starting in 2013, LELWD applied for and received several WMA grants. LELWD used these grants to start planning for the new requirements in the WMA regulations promulgated in 2014. These grants were used to fund studies focusing on minimizing existing impacts of groundwater withdrawals on streamflow through source optimization, water releases and returns and additional conservation measures including water loss control. The first study included an assessment of management actions in the two LELWD subbasins from which LELWD's existing withdrawals are sourced. The results of the project were a set of recommendations under different scenarios detailing the expected improvements to streamflow and estimated cost to LELWD. A follow-up study initiated water loss control and demand management programs. A third project done in cooperation with Westford was funded through WMA grants from 2017-2023 that evaluated opportunities for improvements to streamflow. Results showed that coordinated low-flow releases from the series of impoundments can improve the timing, magnitude, and duration of streamflow in Stony Brook without compromising recreation and ecology. Real-time monitoring stations at four locations have been installed in addition to infrastructure needed to perform releases during low-flow periods. Releases can occur between April 16th and October 14th based on measured streamflow. Grant funding was used to set up a website ([https://www.stonybrookflow.com/\(S\(n0prj10z3t4irrsxcqcihg3e\)\)/Default.aspx](https://www.stonybrookflow.com/(S(n0prj10z3t4irrsxcqcihg3e))/Default.aspx)). The WRC encourages LELWD to continue to maintain and update the website.

Streamflow Analysis

The unimpacted 95% Exceedance Flow was also analyzed. For a transfer derived from streamflow to be considered insignificant, the cumulative transfer including the proposed amount along with previously approved transfers must be less than 5% of the unimpacted 95%

Exceedance Flow. Using the 95% flow-duration statistic generated at the outlet of Forge Pond by the USGS StreamStats application to calculate 5% of the unimpacted 95% Exceedance Flow resulted in approximately 119,000 gallons per day (gpd). This is more than the 75,080 gpd proposed plus previously approved cumulative transfer amount.

At the time of the Woodlands Decision in 2006, impacts to special resources were not anticipated. The Decision referenced a 1999 study of wetland plant communities and a 2005 Oxbow Associates opinion that there would be no impacts to the 16 certified and 33 potential vernal pools identified as of that time in the contributing area of the Littleton water supply from the Woodlands transfer.

In 2018, additional study was done on potential impacts of LELWD's Beaver Brook Wells (2.1, 2.2, & 2.3) when the maximum daily withdrawal was increased to 0.65 MGD from 0.41 MGD in order to maximize the output of the iron and manganese treatment plant constructed in 2014. There was no increase to the system-wide authorized volume. Beaver Brook and associated wetlands were monitored throughout the pumping test, and, according to the MassDEP 2021 WMA permit amendment, drawdown was exhibited in an isolated wetland resource area approximately 100 feet from the wells. LELWD worked with MassWildlife to perform additional pump testing and monitoring. While MassWildlife issued a letter in 2021 stating the project did not result in a prohibited Take of state-listed species, MassDEP required a long-term monitoring plan in the permit special conditions to evaluate if the increased withdrawal adversely impacts water levels in the resource area. Water level monitoring began in 2021. The 2024 draft second permit amendment states that Littleton has notified MassDEP that two more years of monitoring are needed to assess the impact of the increased pumping of the wells. In the 2024 draft second permit amendment MassDEP has included a special condition to continue the monitoring for at least two years at which point LELWD may request that the monitoring be discontinued.

Although the interbasin transfer amount meets the Insignificance flow criterion, there were concerns about potential impacts to endangered species from withdrawals of the new Taylor Street Well. See Criterion 6 for the evaluation.

Criterion #6: Impacts of Groundwater Withdrawals

The new Taylor Street water supply well is located on a parcel that lies within a valley between higher elevation residential neighborhoods to the northwest and Route 495 to the southeast. Monarch Drive, Taylor Street and MA Route 2 border the parcel along the southeast, east, and north boundaries, respectively. Entrance to the site is located through a commercial access point at 151 Taylor Street. Within the property boundaries are wetlands and Beaver Brook, a small stream that runs the length of the northwestern portion of the parcel, flowing southwest to northeast. Beaver Brook is approximately 1,014 feet northwest of the proposed well location. The confluence of Beaver Brook with an unnamed tributary from Black Pond is approximately 1,505 feet downstream from the parcel, which continues on as Beaver Brook. Beaver Brook flows northeast and eventually drains into Forge Pond.

Pumping tests were performed on the Taylor Street Well in 2022 and 2024. The Taylor Street Well is located in an area mapped as habitat for the state-listed Blanding's Turtle. During the 2022 15-day pump test of the proposed Taylor Street Well, a hydraulic connection was observed between the pumping and a nearby ephemeral pool when pumping at approximately 184 gallons per minute³ (gpm, equal to 0.265 MGD, approximately half of the proposed well capacity of 0.529 MGD). In 2024, to better understand the hydraulic connection between the proposed Taylor Street Well and surrounding ephemeral pools, an additional pump test was conducted at approximately 189 gpm⁴ (0.272 MGD) that included the installation of monitoring piezometers and staff gauges at nine ephemeral pool locations collaboratively selected by MassWildlife and LELWD. The pump test was conducted for five days using the eight-inch test well installed in 2022 during a time that all nine ephemeral pools of interest were full, providing adequate conditions to determine impacts from pumping on these important Blanding's Turtles habitats.

The Proponent submitted a report in April 2024 which analyzed the pump test results and included data affirming that five of the nine monitored pools showed a hydraulic connection to the pumping, with effects ranging from elevational changes of less than one inch to more significant drawdowns of several inches (2.25% loss of modeled pool volume). Induced leakage was estimated at 0.57 gpm. The pools with a hydraulic connection during the 2024 pump test include the pools immediately surrounding the test well and the pool south of the test well across the finger of the Beaver Brook wetland system. The outlet channel for the detention basin on the nearby developed site also showed some connectivity. Important habitat for Blanding's Turtles was documented in four of the five pools that were shown to be hydrologically affected by drawdown during pumping. By the end of April, one of the ephemeral features went dry and another had less than six inches of water.

On June 7, 2024, MassWildlife issued a Determination that the project will result in a Take, "due to impact to necessary feeding, breeding, migrating, and sheltering, and overwintering habitats resulting from hydraulic impacts of pumping at 50% of the requested volume. Construction of the well and water line, as well as routine maintenance will include protective measures to minimize the risk of directly harming or killing individuals of this species". Projects resulting in a Take of state-listed species may only be permitted if they meet the performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23).

Based on continued discussions with the Proponent, MassWildlife anticipates that the Proponent will likely qualify for a CMP authorizing use of the well at 0.265 MGD (50% of the requested volume), with specific measures to ensure water levels in the ephemeral pools remain suitable for continued use by Blanding's Turtles during the key biological periods. Under any CMP issued to authorize the 50% requested pumping volume, avoidance and minimization measures will likely be required. During the physical construction of the well, species protection measures

³ The test was conducted on an 8-inch test well. As per Section 4.3.1.5 of MassDEP's Guidelines and Policies for Public Water Systems, the requested permitted rate can be 2x that of the pumping test provided it doesn't exceed the approvable yield calculation. The results of the pumping test provided evidence that the approvable yield was 636 gpm, therefore the approvable rate is 2x the rate at which the pumping test was conducted or 368 gpm (0.529 MGD).

⁴ The second test was run to evaluate the impact on the Blanding's Turtle habitat and has no bearing on the well's approvable rate by MassDEP. The difference in the rates between the two tests (5 gpm) can be accounted for by the fact that groundwater levels were higher during the second test.

and time of year considerations will be required. Once the well is in operation at the approved volume, modification of pumping volume may be necessary to ensure water elevations in key ephemeral pools remain adequate for continued use by state-listed species. Further, MassWildlife anticipates requiring drought-responsive conditions on pumping and requiring implementation of system-wide water conservation measures to minimize demand (e.g., outdoor watering, pool filling), and other measures developed in cooperation with MassDEP.

Although the exact details of the long-term net benefit required under a CMP have not yet been finalized, initial discussions with the Proponent have included habitat management and enhancement, conducting research on Blanding's Turtles in the Beaver Brook system, and additional habitat protection. MassWildlife anticipates that a suitable long-term net benefit can be achieved and that the Project should be able to meet the performance standards of a CMP for the 0.265 MGD withdrawal.

This Criterion will be met upon implementation of conditions (specifically, meeting the performance standards of a MassWildlife CMP).

CONDITIONS FOR APPROVAL

Based on the analyses of this project, the approval of LELWD's application under the ITA to transfer water to areas in the Town of Boxborough is subject to the following conditions.

LELWD must commit in writing within 45 days of the approval to abide by all conditions required by the approval of this transfer.

1. LELWD must limit its sale of water to properties in Boxborough such that no more than 0.060 MGD on a maximum daily basis is transferred to properties in the Concord River Basin. WRC staff may periodically request water bills and metering data from LELWD for the properties located in Boxborough in the Concord River Basin to verify this amount is not exceeded. Any increase in the rate of interbasin transfer is subject to the ITA and will require WRC approval. LELWD staff must notify WRC staff prior to any increases to the IMA with Boxborough.
2. To attain compliance with Water Conservation #3 – UAW, LELWD must continue with the implementation of its 2024 Water Loss Control Plan including completing the recommended actions from the 2023 audit, continuing annual audits starting with the 2023 data, and updating the Water Loss Control plan to include the Boxborough extension and annually with the most relevant information and plan implementation progress to gain compliance with the UAW standard.
3. To attain compliance with Water Conservation Standard #6 - a drought/emergency contingency plan, LELWD must revise its drought management plan to include water supply thresholds, frequency of threshold monitoring, and water supply response actions, to include names and contact information for staff responsible for implementing the plan, and submit the revised drought plan to the WRC within one year.
4. To complete compliance with Water Conservation Standard #10 - Industrial, Commercial, and Institutional (ICI) Use, LELWD must continue to monitor water use on

its metering system for high usage and suspected leaks, and notify the users as needed. LELWD must reach out annually to the top users to direct them to the Commercial Buildings page of EPA's WaterSense website that has information regarding conservation strategies applicable to ICI users to help emphasize the importance of and encourage implementation of water conservation. LELWD must also explore ICI conservation activities including those described in LELWD's 2024 Water Conservation Plan.

5. To complete compliance with Water Conservation Standard #12 - A long-term water conservation program, LELWD must:
 - a. continue to implement its water loss control plan to gain compliance with the UAW standard and review and revise the plan annually as specified in the plan, in accordance with additional audit results and standard industry best management practices.
 - b. continue its successful efforts and extend them to the properties in Boxborough to be connected, to keep rgpcd below 65. The five-year average is 52 rgpcd.
 - c. provide annual summaries of progress and make all documents available upon request to WRC staff for review.
6. To complete compliance with Criterion 6, Impacts of Groundwater Withdrawals, LELWD must continue to work with MassWildlife to complete the development of a Conservation and Management Permit (CMP) for the construction and operation of the Taylor Street Well. The CMP is pursuant to the authority granted in the Massachusetts Endangered Species Act (MESA, M.G.L. c. 131A) and its implementing regulations (321 CMR 10.23). Once the CMP is finalized and approved by MassWildlife, LELWD must submit a copy to the WRC. LELWD must adhere to all requirements of the CMP to MassWildlife's satisfaction, must provide any data requested, and must adhere to any and all changes to the well pumping regimen that may be indicated by the monitoring data. LELWD must notify the WRC of any future revisions to the CMP.

EXECUTIVE ORDER 385

This Decision is consistent with Executive Order 385 - Planning for Growth, which has the dual objective of resource protection and sustainable development. This Decision does not encourage growth in areas without adequate infrastructure nor does it cause a loss of environmental quality or resources.