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March 8, 2019

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS  
ON THE  
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Proposed Municipal Supply Well Field, Lynch Site  
PROJECT MUNICIPALITY : Ipswich  
PROJECT WATERSHED : Parker River Basin  
EEA NUMBER : 15973  
PROJECT PROPONENT : Ipswich Utilities Department  
DATE NOTICED IN MONITOR : January 23, 2019

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project does not require an Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF), the project involves the development of a new groundwater supply at the Lynch Site off of Linebrook Road in Ipswich. The Proponent will construct four municipal supply wells, associated pumping facilities, electrical power and water transmission main. The wells will be capable of pumping at a combined rate of 510 gallons per minute (gpm), which is equivalent to 0.734 million gallons per day (MGD). The project is proposed to improve system redundancy, reliability and resiliency and to meet current and future water demand.

In addition to the development of the wellfield site, the project components include the construction of a 480-square foot (sf) pump station where the water will be chemically treated; installation of 3,800 linear feet (lf) of transmission main to connect the wells to the water distribution system near the Mile Lane Well; and reconstruction of an unpaved access road (approximately 600 feet). The majority of the transmission line will be installed in Mile Lane with the exception of a section that will run from the well site parallel to the access road. The project will be constructed in two phases;

Phase 1 would include construction of the wells (six months) and Phase 2 would include construction of the pumping facilities, access road, power, and transmission main (six to ten months).

The effects of climate change, including sea level rise, changes in precipitation and increases in temperatures, may affect the Town of Ipswich's (Town) water supply over time. To address this potential vulnerability and those posed to the Ipswich coastline and floodplains, the Town is participating in the Municipal Vulnerability Preparedness (MVP) grant program. The MVP program is a community-driven process to define natural and climate-related hazards, identify existing and future vulnerabilities and strengths of infrastructure, environmental resources and vulnerable populations, and develop, prioritize and implement specific actions the Town can take to reduce risk and build resilience.

### Project Site

The 5.87-acre project site (Lynch Site) is located at 215 Linebrook Road and occupies the southern corner of approximately 390 acres Town-owned land. The Town leases the Lynch Site for agricultural use (strawberries). The wellfield site is located within the Egypt River/Bull Brook sub-basin of the Parker River Watershed. Test-well sites (TW-13, TW14, TW-15, and TW16) are located on the south side of Bull Brook, approximately 2,000 feet upstream from the Town's Bull Brook Reservoir and 160 feet south of Bull Brook. The aquifer at the site is a thin layer of gravel (four to six feet thick) and depth to the water table is approximately 45 to 50 feet below ground surface (bgs). The gravel layer is overlain by a confining layer of clay with fine sand and silt above the clay layer.

The Town provides drinking water to approximately 4,500 homes and businesses. The Water Management Act (WMA) authorizes the Town to withdraw on average a total of 1.18 MGD over the year; 0.98 MGD from the Parker River Basin (0.64 MGD registered and additional 0.34 MGD permitted) and 0.2 MGD from the Ipswich River Basin. The Town's water supply system includes two active surface water supplies (Dow Brook Reservoir and Bull Brook Reservoir) and seven groundwater supply sources, two of which are inactive (Mile Lane, Browns, Fellows Road, Essex Road, and three Winthrop Well sources). The Town uses groundwater and surface-water sources within the Parker River Basin and groundwater sources within the Ipswich River Basin.

### Environmental Impacts and Mitigation

Potential environmental impacts associated with the project include the permanent alteration of approximately 11,000 sf of land, creation of approximately 500 sf of impervious area, and alteration of 1,600 sf of Riverfront Area (RFA) associated with the pump house, access road and wellfield. The wellfield will withdraw up to 0.734 MGD of water. Measures to avoid, minimize or mitigate Damage to the Environment include sedimentation and erosion controls during the construction period.

### Permitting and Jurisdiction

The project is subject to MEPA review and preparation of an ENF pursuant to 301 CMR 11.03(4)(b)(1) because it requires Agency Actions and it will result in a new withdrawal of 100,000 or more gallons per day (gpd) from a water source that requires new construction for the withdrawal. The project requires a WMA Permit Amendment (BRP WM 02), New Source Final Report (BRP WS 19), Approval to Construct a Source (BRP WS 20), Approval of Acquisition or Sale of Water Supply Land

(BRP WS 26), and Approval of Chemical Addition Treatment, Serving More Than 3,300 People (BRP WS 29) from the Massachusetts Department of Environmental Protection (MassDEP).

The project requires an Order of Conditions from the Ipswich Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). If the project construction activities disturb one or more acres of land, the project will require a National Pollutant Discharge Elimination System Stormwater Permit for Construction Activities from the U.S. Environmental Protection Agency (EPA).

Because the Proponent may seek Financial Assistance from the Commonwealth for the project through the State Revolving Fund (SRF), MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

### Review of the ENF

The ENF includes a description of the project, project plans, and a discussion of alternatives. It identifies measures to avoid, minimize and mitigate project-related impacts. Comments from MassDEP identify additional information that must be provided for the permitting process and identify outstanding issues that will be addressed in permitting. I received a number of comments that express concerns regarding potential impacts to the Bull Brook sub-basin and Parker River basin, conflicts with agricultural uses, competition for water supply and the alternatives analysis. The Proponent provided supplemental information<sup>1</sup> during the MEPA review period including the WMA Permit Amendment application, New Source Final Report, additional information regarding alternatives, and a response to comments submitted on the ENF.

The ENF included a report titled “Water Demand and Supply Evaluation, Town of Ipswich, MA, February 2019” (Evaluation). The report evaluates the Town’s existing and future water supply and demand and analyzes alternative water supply sources. Future water demand (2040) is estimated at 1.39 MGD. Maximum daily demand is estimated at 4.17 MGD. The Evaluation identifies concerns with the following:

- Safe Yield of Dow and Bull Brook Reservoirs (inadequate supply during dry summers);
- restricted use of wells in the Ipswich River Basin (Fellows Road, Essex Road and Winthrop Wells) to no more than 0.2 MGD on average annually (limiting use to 14 percent of capacity);
- elevated levels of manganese in the Browns Well (Parker River Basin) which limit pumping to no more than 0.2 MGD (less than half the permitted capacity of 0.49 MGD),
- elevated levels of iron and/or manganese in the Fellow Road Well and Winthrop Wells (Ipswich River Basin) – absent the WMA restrictions for the Ipswich River Basin, the Proponent would consider construction of a water treatment plan (WTP) to remove iron/manganese and use the 1.39 MGD approved daily pumping capacity; and
- growth in water demand and need to provide operational flexibility and resiliency to drought.

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<sup>1</sup> Emails from Doug Denatale, AECOM, on behalf of the Town on February 11, 2019 and Teri Demers from the Town on February 22, 2019.

The Evaluation provides a history of water supply development and evaluation over the past 130 years. It discusses the challenges of identifying groundwater supply in Ipswich including: thin, discontinuous aquifers buried beneath widespread layers of clay, which are difficult to find and develop; small watersheds; presence of iron and/or manganese associated with wetlands; challenge of siting wells away from developed areas on large parcels of Town-owned land which are limited in number; and ruling out new sources of groundwater in the Ipswich River Basin (0.2 MGD WMA registration).

The Evaluation includes an alternatives analysis including: No-Action; Conservation and Demand Management; new well fields, reservoir expansion, desalination, wastewater reuse, and interconnections with surrounding communities. The No-Action Alternative was dismissed because it would not provide redundancy, reliability and resiliency to the municipal water supply and would not increase capacity necessary to meet future demand. Several of the existing sources are stressed and/or withdrawals are limited due to regulatory restrictions.

The Conservation and Demand Management Alternative consists of continued implementation of the Town's water conservation program including the Water-Use Restriction Bylaw, universal metering and meter replacement, monthly billing and seasonal rate-structure to manage summertime demands, and advanced metering infrastructure (AMI). Through a combination of strategies, the Town has reduced water demand from 1.35 MGD in 1995 to 1.01 MGD. The current residential consumption is 48.4 gallons per capita per day (RGPCD), which is 33 percent lower than the performance standard of 65 RGPCD. This progress has reduced water use; however, the Town has determined that it needs to develop additional sources to achieve the goals of increasing reliability and redundancy of the system. Similarly, the Leak Detection Alternative involves continuing to pursue the target of 10 percent unaccounted for water (UAW) (15.8 percent UAW reported in 2017).

Initial screening of new water supply sources or expansion of existing sources included new well fields (Lynch Well Field and the Browns Well (piping to WTP or new greensand filtration plant)), reservoir expansion (raising existing dams, excavating around reservoirs/removing sediment, building new upstream dams, building storage tanks), desalination, wastewater reuse, and interconnections with surrounding communities. These alternatives were evaluated based on the following criteria: increase in capacity, technical feasibility, permit requirements, stakeholder concerns, treatment requirements, additional staffing needs, concept-level costs and schedule for implementation. The Evaluation includes an alternative comparison matrix.

The New Well Fields Alternative received the highest score in the comparison matrix and had the lowest cost per gallon of additional water-supply capacity<sup>2</sup>. In terms of dollars per gallon of additional capacity, the Lynch Well Site has a cost of \$4.10 per gallon; Browns Well, with a transmission main has a cost of \$5.80 per gallon; and Browns Well with a greensand filtration plant has a cost of \$18.30. The Lynch Well Site would provide sufficient capacity to meet current and future demands. Browns Well would meet current demands and provide flexibility but would not meet the full 2040 estimated average daily demand. The Lynch Well Site is undergoing MassDEP review. Sole replacement of either Browns Well option would not provide redundancy. Supplemental information provided by the Town indicates that when the Ross Property was tested for groundwater supply in 2005, it was found to be underlain by glacial till and not suitable for a municipal supply.

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<sup>2</sup> More cost detail is available for the new and replacement well options because the Town has worked on these issues over the past several years.

Increasing the storage volume at the reservoirs received the third highest score in the comparison matrix. Raising the Dow and Bull Brook Reservoir dams could increase storage volume by approximately 24 million gallons (MG) which would increase the Firm Yield by approximately .08 MGD. Raising the dams had the third highest estimated cost of \$32.5 per gallon of additional yield. Building additional storage tanks had the highest estimated cost at \$275 per gallon of additional capacity and was dismissed from further evaluation. Excavating around the reservoirs could also increase the Firm Yield by approximately .08 MGD and had a cost of \$83.75 per gallon of additional capacity. These alternatives were not recommended for further evaluation.

Brackish water reverse osmosis (BWRO) desalination received the second highest score on the comparison matrix with an estimated cost of \$8.30 per gallon of additional capacity, based on a supply of 3 MGD. A BWRO plant could be constructed on Town-owned land and would optimize the use of existing infrastructure by discharging brine to the wastewater treatment plant (WWTP) and using the water storage tank located nearby. This alternative assumes that the groundwater will be brackish in quality and would require additional investigation and studies to estimate the quantity and quality of the water available. If the wells could provide sufficient water to meet demands, the Town could consider abandoning some or all of its existing sources. This alternative will require additional analysis and is recommended for further evaluation.

Wastewater reuse received the lowest score because it would not directly increase capacity, although it could increase the volume of water stored in the reservoirs in the warmer months which are periods of high demand. Wastewater could only be discharged when the ground is not frozen and would require additional staff. The Evaluation indicates that the volume of water cannot be confidently estimated because it would be discharged upstream of the reservoirs into the watershed, where only a portion would recharge the reservoirs. Assuming that wastewater reuse could provide an additional 0.9 MGD in capacity, it was estimated at a cost of \$13.90 per gallon of additional capacity. This alternative was not recommended for further evaluation.

Interconnections with surrounding communities received the second lowest score because it would not increase yield and because these communities are likely to be in drought conditions at the same time as Ipswich. The Evaluation notes that these connections would be useful for emergencies, such as failure of the WTP or contamination of wells. Connections with larger water suppliers such as the Massachusetts Water Resources Authority (MWRA) or the Salem and Beverly Water Supply Board would require construction of significant lengths of transmission main, and would need to address water quality and hydraulic pressure. Further evaluation of interconnections was not recommended.

The Town selected the following alternatives for additional analysis: New Lynch Well Site; Browns Replacement Well with Transmission Main to the WTP; Browns Replacement Well with a new Greensand Filtration Plant; and Desalination. The Browns Well has been a reliable water source for the Town and with treatment for iron and manganese it can continue to provide water. The Town intends to replace the Browns well and construct a transmission main to the WTP. This option is the least expensive of the three alternatives and will increase the water supply capacity by 0.28 MGD. Browns Well and the addition of the Lynch Well Site (0.73 MGD) would meet the Town's identified demand.

*Wetlands*

The project will result in 1,600 sf of impacts to RFA. The Ipswich Conservation Commission will review the project to determine its consistency with the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, including stormwater management standards (SMS). The Proponent will be required to include information in the Notice of Intent that demonstrates the project's consistency with the performance standards for RFA pursuant to 310 CMR 10.58, including an alternatives analysis.

*Water Supply and Agricultural Resources*

MassDEP will review the project for its consistency with the WMA regulations (310 CMR 36.00) and the Drinking Water Regulations (310 CMR 22.00). The Proponent requires an amendment to its existing Water Withdrawal Permit to include the Lynch Wellfield as an authorized withdrawal point. The Town will be required to conduct additional analysis during permitting, including further evaluation of potential environmental impacts and impacts to users.

The project includes construction of four gravel-packed wells at the location of test-well sites. These have been designed to spread out the drawdown because of the thin aquifer layer. The Town estimated that the four wells could yield of 300 to 400 gpm (equivalent to 0.43 to 0.58 MGD). MassDEP approved the design for a prolonged pumping test of the wellfield on June 27, 2018. The Proponent conducted a 15-day pump test in August 2018. Well TW-15 was pumped alone to obtain early-time drawdown data to evaluate the aquifer characteristics at a rate of 302 gpm. After two days, the other three wells were pumped and the four wells were pumped at 75 gpm each for the remainder of the test (total pumping rate of 300 gpm). On August 28, MassDEP reviewed drawdown data provided and concurred that the pumping test had reached stabilization and could be shut down.

The Proponent concluded from the pumping test data that the wellfield is approvable by MassDEP for a pumping rate of 510 gpm, which is equivalent to a daily withdrawal volume of 0.73 MGD. Supplemental information indicates that the Proponent plans to pump the Lynch Wells at a rate of approximately 0.3 MGD on average when they first become operational, which is the equivalent of pumping 510 gpm, 10 hours per day. In accordance with MassDEP Guidelines, the wellfield can be approved for the lower of the "calculated approvable yield" based on the pumping test data, or twice the pumping test stabilization rate. MassDEP comments indicate that it has not yet determined whether it concurs with 510 gpm as the approvable rate for the Lynch Wellfield.

The ENF indicates that the Proponent examined impacts of pumping on water levels in the adjacent Bull Brook; four shallow well points were installed to depth of four to seven feet beneath the streambed in one to two feet of standing water. The Town has concluded, based on the pumping test, that there is a weak and indirect hydraulic link between Bull Brook and the Lynch wells.

Comments from MassDEP, based on a review of the ENF and its preliminary review of the Source Final Report and the BRP WM 02 application, identify information that should be provided for permitting and issues that will be addressed during the WMA permitting process:

- Drawdown rate increase during pumping test:

- provide an interpretation of the drawdown rate increase that occurred toward the end of the constant rate pumping test, and
- provide assurance of the long-term viability of the source for the Town based on the potentially limited extent of the tested aquifer;
- Impacts of the Lynch Site withdrawals on Firm Yield:
  - estimate the Bull Brook reservoir system's existing Firm Yield and extent of reductions associated with the Lynch Wellfield withdrawals based on the Proponent's opinion that the reservoir's Firm Yield is less than the 0.8 MGD identified in the existing WMA permit (recently identified as 0.41 MGD), and
  - evaluate the net increase in its system-wide capacity after accounting for the Firm Yield reduction (assuming a strong hydraulic connection between the semi-confined aquifer and the unconfined aquifer and surface water locally);
- Evaluate how other water users, such as agricultural operations, will be impacted based on the understanding that groundwater and surface water at the site are connected and withdrawals may impact surface water uses over the long term;
- Alternatives Analysis including Ross Well; and
- Evaluation of conservation and demand management efforts to ensure compliance with existing permit conditions.

The Proponent may include the design plans and specifications for the chemical addition treatment as part of its submittal for the Approval to Construct Source (BRP WS 20) permit.

MassDEP requires a public water supplier to own or control the Zone I protective radius around a groundwater source, which is a 250-foot radius around each of the four proposed wells for the Lynch Site. The Town owns approximately 90 percent of the Zone I area. The majority of the remaining Zone I consists of wetlands adjacent to Bull Brook. MassDEP cannot approve the construction of the permanent pumping and treatment facilities until the Town has demonstrated that it has acquired ownership or control of the entire Zone I. Acquisition of water supply land or rights in land for water supply protection purposes requires MassDEP approval and a public hearing.

MassDEP requires public water suppliers seeking approval for withdrawals greater than 100,000 gpd to protect the Zone II wellhead protection area from incompatible land uses using zoning and non-zoning controls. Comments from MassDEP indicate that provided it approves the proposed Zone II delineated for the Lynch Wellfield, which is entirely within the Zone II of the approved Mile Lane Well, further actions will not be required.

During the pumping test, perfluorinated compounds were detected in the wellfield water at concentrations below the current 70 nanograms per liter drinking water Guideline that has been established by MassDEP. MassDEP is evaluating whether this standard should be lowered and will work with the Proponent during permitting to ensure that any potential exceedances of a drinking water standard will be properly mitigated.

The project will install approximately 3,800 lf of water main to connect the wellfield to the distribution system near the Mile Lane Well instead of connecting directly to the distribution system on Linebrook Road. MassDEP comments indicate that water mains closer to the wellfield may not be large enough to accommodate that volume of water. MassDEP comments suggest that the Proponent consider

installing a continuous analyzer by the Mile Lane Well and seek a certification from the EPA (Ground Water Rule 4-log) for the wellfield because the transmission main will provide contact time for disinfection treatment (99.99 percent inactivation or removal of viruses).

Comments from the Massachusetts Division of Marine Fisheries (DMF) identify concerns with potential impacts on the Bull Brook/Egypt River system associated with historic, existing and proposed water withdrawals and request the Town address cumulative impacts. Supplemental information indicates that the minor amount of water that might be diverted from the brook due to pumping during periods of low flow would otherwise flow 2,000 feet downstream to recharge Bull Brook Reservoir and is unlikely to reach the Egypt River.

Comments, including those from DMF, question the Proponent's conclusion that the pumping test demonstrated a weak and indirect hydraulic link between Bull Brook and the Lynch Site. Comments assert that the pumping test did not adequately represent impacts once the project is fully operational and recommend additional analysis including testing in multiple seasons and flow conditions; at the proposed withdrawal rate of 510 gpm; and further downstream from the wellfield. The Town provided supplemental information to respond to these concerns. The Town indicated that:

- water levels in Bull Brook are not impacted by pumping (including conducting pump testing during August which is one of the drier months when impacts to streams are most evident);
- there will be a minor diversion of groundwater from Bull Brook (18 gpm based on a worst case scenario);
- there is minimal interaction between the Lynch Site and Bull Brook Reservoir (previous test-well drilling suggests that the reservoir may be entirely underlain by clay);
- groundwater quality is not an indicator of groundwater-surface water interactions based on the widespread but discontinuous presence of clay in the area; and
- the presence of subsurface layers of clay may limit direct interaction between confined aquifers and surface water.

The supplemental information includes a chart (Figure 2-9) which plots water levels in Bull Brook for all four well points and depicts brook levels rising after rain events and falling until the next rain event. For the period of no rainfall between August 22 to September 6, water levels in the brook continued to decline after August 28, when the pumping was terminated. The Town asserts that if a strong and direct hydraulic link existed, brook levels would have increased when pumping stopped. In addition, the Town indicates that the combination of the subsurface clay layer, low-permeability of the streambed and narrow stream-channel limit the connection between the Lynch wells and Bull Brook.

Comments from the Massachusetts Department of Agricultural Resources (DAR) and others identify concerns regarding agricultural uses including the availability of water for irrigation and the limitations and prohibition of uses within the Zone I and Zone II. It is likely that the Zone I restrictions on fertilizer application would prohibit some agricultural purposes. DAR comments recommend an accommodation for the growing and harvesting of hay within the Zone I. Several commenters identify concerns regarding observed impacts to the Richards Irrigation Pond, which is located north of Bull Brook and approximately 500 to 600 feet from the wellfield, during the pumping test. The Town has acknowledged a connection. The Town has indicated its commitment to work with the farmers to

identify an alternative water source for irrigation before the Lynch Wellfield is operational and to address fertilizer and agricultural-chemical use.

### *Construction*

The project must comply with MassDEP Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. c.40, s.54. All construction activities should be undertaken in compliance with the conditions of all State and local permits. Erosion and sedimentation controls will be implemented to reduce potential impact to wetlands. I encourage the Proponent to select project contractors that have installed retrofit emissions control devices, or vehicles that use alternative fuels to reduce emissions of VOCs, carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). The Proponent is advised that if oil and/or hazardous material are identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000) must be made to MassDEP.

### Conclusion

Based on the information provided during MEPA review and on consultation with State Agencies, I find that no further MEPA review is required prior to permitting. The ENF has sufficiently defined the nature and general elements of the project for the purposes of MEPA review and demonstrated that the project's environmental impacts will be avoided, minimized and/or mitigated to the extent practicable. MassDEP has sufficient regulatory authority to address outstanding issues and permitting will include additional opportunity for public review and comment.



March 8, 2019

Date

Matthew A. Beaton

### Comments:

02/11/2019 Kerry Mackin (2<sup>nd</sup> comments 02/12/2019)  
 02/11/2019 Donald Galicki – Galicki Farms  
 02/11/2019 Marini Farm  
 02/12/2019 Massachusetts Division of Marine Fisheries (DMF)  
 02/12/2019 Massachusetts Department of Environmental Protection (MassDEP) –  
 Northeast Regional Office (NERO)  
 02/12/2019 Parker River Clean Water Association (2<sup>nd</sup> comments 02/26/2019)  
 02/12/2019 Ipswich River Watershed Association  
 02/14/2019 Ipswich Agricultural Commission  
 02/14/2019 Carolyn Britt  
 02/26/2019 Massachusetts Department of Agricultural Resources (DAR)

MAB/PPP/ppp



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

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Charles D. Baker  
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Lieutenant Governor

Matthew A. Beaton  
Secretary

Martin Suuberg  
Commissioner

February 12, 2019

Matthew A. Beaton, Secretary  
Executive Office of  
Energy & Environmental Affairs  
100 Cambridge Street  
Boston MA, 02114

RE: Ipswich  
Proposed Municipal Supply Well Field,  
Lynch Site  
215 Linebrook Road  
EEA # 15973

Attn: MEPA Unit

Dear Secretary Beaton:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Environmental Notification Form (ENF) submitted by Ipswich Utilities Department, for the proposed construction of a Municipal Supply Well Field at the Lynch Site located at 215 Linebrook Road in Ipswich. MassDEP provides the following comments.

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) for the Town of Ipswich Utilities Department's proposed Lynch Wellfield, located off of Linebrook Road in Ipswich (EEA Case No. 15973). The Town is proposing a wellfield of four gravel packed wells on the south side of Bull Brook, roughly 2,000 feet upstream from the Town's Bull Brook Reservoir. The nearest of the wells is about 160 feet south of Bull Brook.

For several years, the Town has been investigating possible water sources to supplement or replace its existing supplies, in order to provide redundancy and to minimize the use of two existing municipal wells that have levels of naturally occurring manganese in excess of the health-based Massachusetts drinking-water guideline of 0.3 milligrams per liter.

In accordance with the Water Management Act (Massachusetts General Laws c. 21G), the Town of Ipswich is authorized to withdraw an average of 0.98 million gallons per day (MGD) from the Parker River Basin, but only 0.2 MGD from the Ipswich River Basin. Therefore, the Town conducted 2016 test well drilling in the Parker River Basin, where it owns considerable land in the vicinity of the Bull Brook and Dow Brook Reservoirs. The Town identified a location off of Linebrook Road to site an additional water supply source, on a land parcel that the Town currently leases for agricultural use. The aquifer at the site is a thin layer of gravel, 4 to 6 feet thick, that is 45 to 50 feet below the ground surface. The gravel layer is overlain by a confining layer of glaciomarine clay, with fine sand and silt above the clay layer. Because of the thin aquifer layer, a wellfield of multiple wells was proposed, to spread out the drawdown. The Town's hydrogeologic consultant, AECOM, estimated that a wellfield of four wells at this location could produce a yield of 300 to 400 gallons per minute (gpm), which is equivalent to 0.43 to 0.58 MGD.

An Early Notice of the wellfield project was published in the May 9, 2018 *Environmental Monitor*. Following the comment period, MassDEP conducted a site examination inspection of the proposed wellfield site on June 11, 2018. MassDEP approved the site for further testing for public water supply, and approved the design for a prolonged pumping test of the wellfield, on June 27, 2018.

The prolonged pumping test was conducted from August 13 to August 28, 2018. Four 8-inch-diameter test wells were pumped. Well TW-15 was turned on two days before the other wells, in order to obtain early-time drawdown data to evaluate the aquifer characteristics, and pumped at a rate of 302 gpm. After two days, the other three wells were turned on, and the four wells were pumped at 75 gpm each for the remainder of the test. On August 28, MassDEP reviewed drawdown data provided by AECOM, and concurred that the pumping test had reached stabilization and could be shut down.

AECOM has concluded from the pumping test data that the wellfield is approvable by MassDEP for a pumping rate of 510 gpm — a daily withdrawal volume of 0.73 MGD. In accordance with MassDEP Guidelines, the wellfield can be approved for the **lower** of the “calculated approvable yield” based on the pumping test data, or twice the pumping test stabilization rate. MassDEP has not yet determined whether it concurs with 510 gpm as the approvable rate for the Lynch Wellfield.

The Lynch Wellfield will require the following Water Management Act (WMA) and Drinking Water Program approvals from MassDEP:

- **Water Withdrawal Permit Amendment in the Parker River Basin** (MassDEP Permit Category BRP WM 02) – Evaluates the wellfield's potential impacts on environmental receptors, such as streamflow and wetlands, and upon other water users.
- **Source Final Report, for Source 70 Gallons Per Minute or Greater** (BRP WS 19) – Reviews the pumping test results to establish the approved pumping rate, evaluate the need for water treatment, and review delineation of the Zone II wellhead protection area.

- **Approval of Acquisition or Sale of Water Supply Land** (BRP WS 26) – Massachusetts General Laws, Chapter 40 Section 41, requires MassDEP approval, following a public hearing, for a town, water supply district, or fire district to acquire land or rights in land for water supply protection purposes.
- **Approval to Construct Source, for Source 70 Gallons Per Minute or Greater** (BRP WS 20) – Reviews the design plans and specifications for construction of the permanent pumping facilities.
- **Approval of Chemical Addition Treatment, Serving More Than 3,300 People** (BRP WS 29) – Reviews the design plans and specifications for construction of chemical feeds for water treatment. Projected treatment for the wellfield water includes corrosion control, disinfection, and fluoridation.

Applications for the first two of these approvals were received by MassDEP in December 2018, and are presently under review.

The Town of Ipswich is presently registered under the WMA for a withdrawal of 0.64 MGD in the Parker River Basin. The Town also has a Water Withdrawal Permit that allows it to withdraw an additional 0.34 MGD from the basin, for a total authorized withdrawal volume of 0.98 MGD in the Parker River Basin. This 0.98 MGD is the daily average that is authorized, with compliance based on the volume withdrawn over a calendar year. The Town needs (and has already submitted the application for) an amendment to its existing Water Withdrawal Permit, so that the Lynch Wellfield will be included as an authorized withdrawal point from which a portion of the Town's authorized withdrawal volume of 0.98 MGD may be withdrawn.

Based on preliminary review of the Source Final Report and the BRP WM 02 application, the Town needs to address, at minimum, the following during the WMA permitting process:

- **Drawdown rate increase during pumping test:** the Town should provide an interpretation of the drawdown rate increase that occurred toward the end of the constant rate pumping test (though stabilization criteria were achieved in the final 24 hours of the test). Given the potentially limited extent of the tested aquifer, the pumping test analysis should provide assurance of the long-term viability of the source for the Town, to the extent possible.
- **Impacts of the Lynch Site withdrawals on Firm Yield:** The BRP WM 02 application noted that the Town believes Bull Brook Reservoir's Firm Yield to be less than the 0.8 MGD identified in the Town's existing WMA permit. The Town should estimate the reservoir system's existing Firm Yield and the extent to which it will be further reduced by the Lynch Wellfield withdrawals. The Town should also evaluate the net increase in its system-wide capacity after accounting for the Firm Yield reduction. This evaluation should assume a strong hydraulic connection between the semi-confined aquifer and the unconfined aquifer and surface water locally.
- **Impacts to other local water uses:** As previously noted, a clear communication exists between groundwater and surface water at the site, which may impact surface water uses over the long term. The Town should evaluate how other water uses, such as the local agricultural operations, will be impacted.

- **Alternatives Analysis:** MassDEP will request a description of the alternatives analysis referenced in the ENF, particularly with regard to the Ross Property in 2005.
- **Conservation:** MassDEP will be evaluating Ipswich's conservation and demand management efforts to assure compliance with their existing permit conditions.

The Town is welcome to include the design plans and specifications for the chemical addition treatment as part of its submittal for the Approval to Construct Source (BRP WS 20) permit; it is not necessary for the Town to make a separate submittal for the BRP WS 29 permit.

MassDEP requires a public water supplier to own or control the Zone I protective radius around a groundwater source. For the Lynch Wellfield, the Zone I is a 250-foot radius around each of the four proposed gravel packed wells. The Town presently owns about 90% of the Zone I area. Most of the remaining Zone I consists of wetlands adjacent to Bull Brook. MassDEP cannot approve the construction of the permanent pumping and treatment facilities until the Town has demonstrated that it has acquired ownership or control of the Zone I. Control of the Zone I is generally established via easement and Conservation Restriction, as described in MassDEP Drinking Water Program Policy # 94-03. The Conservation Restriction and easement language must be reviewed by MassDEP. Acquisition of water supply land or rights in land requires MassDEP approval (BRP WS 26 permit) and a public hearing.

For wells/wellfields that will be approved for 100,000 gallons per day or more, MassDEP requires public water suppliers to protect the Zone II wellhead protection area from incompatible land uses using zoning and non-zoning controls that meet the requirements of 310 CMR 22.21(2). The Zone II wellhead protection area that AECOM has delineated for the Lynch Wellfield is entirely within the Zone II that MassDEP has previously approved for the Mile Lane Well. MassDEP has already approved Ipswich as having met the requirements of 310 CMR 22.21(2) for the Mile Lane Zone II. Therefore, provided that MassDEP approves the Zone II that AECOM has delineated for the Lynch Wellfield, the Town will not have to take any further actions to meet the requirements of 310 CMR 22.21(2).

During the pumping test, perfluorinated compounds were detected in the wellfield water. The detections were below the current 70 nanograms per liter drinking water Guideline that has been established by the MassDEP Office of Research and Standards. MassDEP is currently evaluating whether the drinking water standard should be lowered. MassDEP will work with the Town during the permitting process to ensure that any potential exceedances of a drinking water standard will be properly mitigated.

The ENF states that a pump station will be constructed at the Lynch site that will include the chemical treatment feeds. Rather than connecting to the distribution system on Linebrook Road, about 3,800 feet of transmission water main will be installed to connect the wellfield water to the distribution system near the Mile Lane Well (the water mains closer to the wellfield may not be large enough to handle that much water). MassDEP suggests that since the transmission main will provide contact time for the disinfection treatment, the Town should consider installing a continuous analyzer by the Mile Lane Well and seek Ground Water Rule 4-log certification for the wellfield.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact [Thomas.Mahin@state.ma.us](mailto:Thomas.Mahin@state.ma.us) at (978) 694-3226 for further information on water supply issues. If you have any general questions regarding these comments, please contact me at [John.D.Viola@state.ma.us](mailto:John.D.Viola@state.ma.us) or at (978) 694-3304.

Sincerely,

*This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.*

John D. Viola  
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission  
Eric Worrall, Tom Mahin, Jim Persky, MassDEP-NERO

# THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS



## Department of Agricultural Resources

101 University Drive, Suite C-4, Amherst, MA 01002  
6413-548-1906 fax: 413-548-1901 www.mass.gov/agr



CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

MATTHEW A. BEATON  
Secretary

JOHN LEBEAUX  
Commissioner

### MEMORANDUM

To: Matthew Beaton, Secretary  
Executive Office of Energy and Environmental Affairs

Attn: Purvi Patel, MEPA Office

From: Barbara Hopson, Regional Planner 

**RE: EEA #15973 PROPOSED MUNICIPAL SUPPLY WELL FIELD, LYNCH SITE- IPSWICH**

Date: February 25, 2019

The Department has reviewed the above mentioned project with respect to the potential impact to agricultural land near the proposed municipal well site. The Ipswich Utilities Department is proposing to construct a well field of four new municipal groundwater supply wells in the Egypt River/Bull Brook sub-basin of the Parker River Basin. The proposed wells will be constructed at the Lynch Site and will be capable of pumping a maximum daily withdrawal of 0.734 million gallons per day. The proposed wells will augment the Town's existing water-supply sources.

Although, the Town of Ipswich acquired the Lynch site with the intention of siting a public water supply well, the Department is concerned about the impacts on agricultural uses, specifically the availability of water for agricultural irrigation purposes in the local area and the limitations and prohibition of uses within the Zone I. The Zone I is approximately 11 acres in size and includes Parcel A, a town-owned parcel leased out for strawberry production. Mass. DEP regulations (310 CMR22.01-Zone I) permit only those activities directly related to providing water and no significant adverse impacts on water quality in the Zone I area. Farming is not an activity directly providing water and therefore is significantly limited in the Zone I. Although Parcel A is currently leased for strawberry production, MassDEP in the past has allowed for growing and harvesting of hay (no fertilizer and/or manure application) within the Zone I. The Department would encourage an accommodation for the growing and harvesting of hay within this Zone I.

In addition to the direct impact of the Zone I on local agricultural activities, the Department has substantial concerns about the impact of a new public water supply system on local use of water for irrigation purposes. The Zone II could potentially adversely impact an abutting farm in addition to the impact of irrigation needs of the farm.



**David E. Pierce, Ph.D.**  
*Director*

# *Commonwealth of Massachusetts*

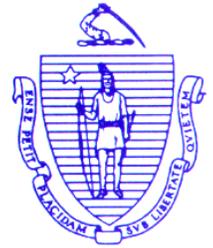
## **Division of Marine Fisheries**

251 Causeway Street, Suite 400

Boston, Massachusetts 02114

(617)626-1520

fax (617)626-1509



**Charles D. Baker**  
*Governor*

**Karyn E. Polito**  
*Lieutenant Governor*

**Matthew A. Beaton**  
*Secretary*

**Ronald Amidon**  
*Commissioner*

**Mary-Lee King**  
*Deputy Commissioner*

February 12, 2019

Secretary Matthew A. Beaton  
Executive Office of Energy and Environmental Affairs (EEA)  
Attn: MEPA Office  
Purvi Patel, EEA No. 15973  
100 Cambridge Street, Suite 900  
Boston MA 02114

Re: Proposed Municipal Supply Well Field, Lynch Site, Ipswich

Division of Marine Fisheries (MA DMF) staff have reviewed the Environmental Notification Form (ENF) for the development of a new water supply well field at the Lynch Site off Linebrook Road in Ipswich. New infrastructure will include four drilled wells, a pumping station building, access roadways and a water main. The wells will pump 510 gallons per minute (gpm) with a maximum daily withdrawal of 0.734 million gallons per day.

The project site is adjacent to DEP mapped wetlands associated with Bull Brook, which drains to Dow Brook and the Egypt River on the northern edge of the Town-owned parcel. Egypt River joins the Rowley River roughly 1.5 miles north of the parcel. The Bull Brook/ Egypt River system is a historically active migratory and spawning pathway for rainbow smelt (*Osmerus mordax*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*) and white perch (*Morone americana*) (Fig 1). The brook and reservoirs are also likely utilized by American eel (*Anguilla rostrata*) for forage and juvenile development when flow allows. Limited MA DMF river sampling data from the 1990's and 2000's indicated that flow conditions were suitable for diadromous fish spawning in the spring, but periods of low flow could potentially reduce suitability at other times of year.

MA DMF offers the following comments for your consideration:

- It is unclear how historic water-supply related modifications to this system have affected flow and habitat suitability. The Town should provide a detailed account of historic and existing withdrawals, and how those relate to the proposed withdrawals. Cumulative impacts to the system should be addressed. The Town should include a description of any related regulatory proceedings so that reviewers have the full context of this project.
- The ENF and supplemental New Source Final Report provided by the consultant describe a 15-day pumping test conducted in August 2018 to evaluate well yield, water quality and impacts to Bull Brook flow. The report found "weak and indirect" linkage between the wells and the brook, however this is not very well supported since water levels in the brook dropped during pumping. We are not confident that the test adequately represented how flow will be affected when the project is constructed and fully operating. It is important that multiple seasons and flow conditions be tested, and at the proposed withdrawal rate (510gpm as opposed to the 300gpm tested). Testing sites should be placed farther from the proposed wellfield to adequately sample impacts to downstream spawning habitats.

- More information is needed to understand the year-round flow and fisheries access conditions between the Egypt River and the Bull Brook at the proposed site. If suitable habitat does in fact continue to exist, it is important that adequate flow not be reduced during the spring and fall migrations (April 1 to November 15).

Questions regarding this review may be directed to Jill Carr in our Gloucester office at (978) 282-0308 ext. 108.

Sincerely,

A handwritten signature in cursive script that reads "David E. Pierce".

David E. Pierce, PhD  
Director

DP/JC/sd

Cc: Richard Lehan, DFG  
Tay Evans, Kathryn Ford, Brad Chase, Ben Gahagen DMF  
Ipswich Conservation Commission  
Doug Denatale, AECOM  
Wayne Castonguay, IRWA

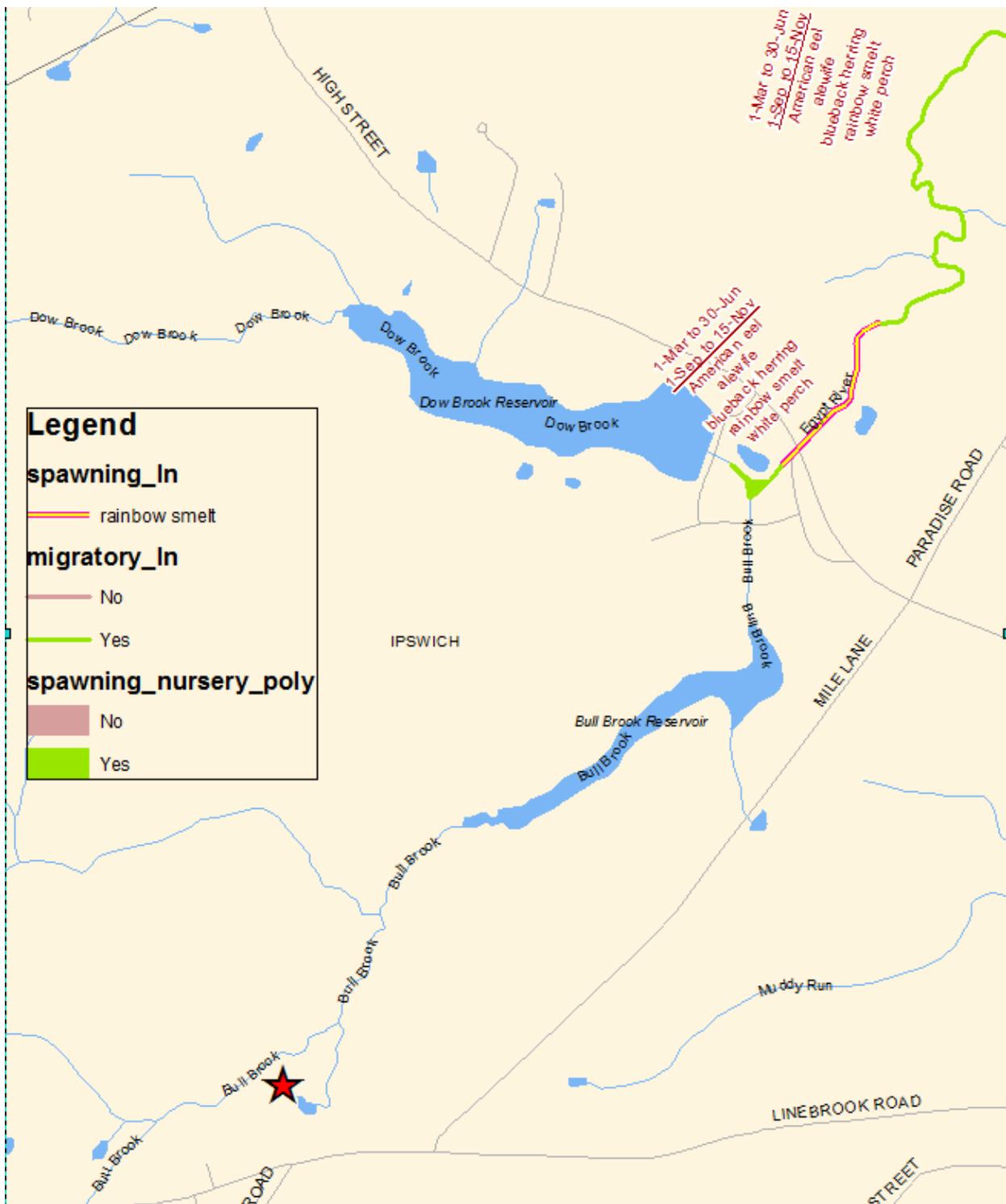


Fig 1. Documented diadromous fish passageways associated with Bull Brook, Ipswich. Approximate wellfield site marked by red star.

PO Box 798 • Byfield, MA 01922



www.Parker-River.org • 978-462-2551

February 12, 2019

Secretary of Energy & Environmental Affairs  
EEA, Attn: MEPA office  
Purvi Patel, EEA No. 15973  
100 Cambridge Street, Suite 900  
Boston MA 02114

RE: Proposed Municipal Supply Well Field, Lynch Site

Dear Ms. Patel:

On behalf of the Parker River Clean Water Association (PRCWA), I would like to take this opportunity to comment on the proposal by the Town of Ipswich to place four new wells within the Parker River drainage area located in the Rowley/Egypt sub-basin. Specifically, along a main tributary and vital perennial stream named Bull Brook.

PRCWA's mission is to preserve and protect the Parker River, its tributaries and its ecosystem through the development of community-based objectives and coalitions based upon individuals, groups, businesses, schools, and governments who understand their connection to the river and the watershed and who will act to protect it for future generations.

In June of 2018 I attended a meeting and site visit with officials of the Ipswich Water Department, MassDEP, AECOM engineering consultants, local farmers, and the local Conservation Agent on the proposal. I expressed my concern that additional wells placed in close proximity to Bull Brook would further impair what is considered by the MA Water Resource Commission to be a highly stressed basin.

The final report acknowledges Bull Brook routinely runs dry, which to the casual observer should be an indication of the impact current withdrawals have on Bull Brook. An EEA funded water balance report completed in 2007 for the Town of Ipswich and the Ipswich River Watershed Association (IRWA) indicates as much as 1.2 MGD leaves the Parker basin and never returns.

AECOM is confident there is little or no hydraulic connection to Bull Brook, and that the underground aquifer may be the result of a fault line running through Connecticut and Massachusetts. My doubts about the lack of hydraulic connectivity was raised by the pumping analysis results indicating levels of chloride (road-salt?) above State drinking water guidelines

and higher than normal bacteria levels (farming activity?). AECOM analysts found a direct connection to a surface water irrigation farm on the opposite side of Bull Brook. PRCWA believes further analysis is needed on the impact to nearby wetland resources.

Several programs offered by PRCWA engage citizen scientists in the local communities. Our members have been involved with certifying over 70 vernal pools to the Mass Natural Heritage and Endangered Species Program (NHESP).

We involve many schools and institutions in head-starting the Blanding's Turtle, considered a State *threatened* species. One of those schools included in our programs is the Doyon Elementary School. The Doyon School is located directly across the street (Linebrook Road) from the proposed well field. In the past, the school, with the help of Ipswich DPW, have assisted children with amphibian migration across Linebrook Road to nearby wetlands.

The AECOM cites several Certified Vernal Pools in the area, but MassGIS maps indicate several Potential Vernal Pools as close as a few hundred feet to the proposed well. During the site visit I mentioned the closest wetland to the well field might be an outstanding water resource for breeding activity and is worth monitoring.



**Potential vernal pools to the east and northeast of the property indicate by Green Dots**

Pump tests indicate the dramatic effect they are having on nearby irrigation ponds. Concurrently, other surrounding wetlands may also be adversely affected by increased withdrawals. The Massachusetts Wetlands Protection Act provides for Wildlife Habitat Evaluations for proposed projects that may alter vernal pool habitat. PRCWA feels in this case an evaluation is warranted and should be part of the scope of an Environmental Impact Report.

Evidence suggests in the 2007 Water Balance report the riverway provided passage for various amount of fish in the past including banded sunfish, pumpkinseed, bluegill, redfin pickerel, chain pickerel, smallmouth bass, bullhead, brook trout, fallfish, killifish, golden shiner, rainbow smelt, alewife, blueback herring, American eel, and white sucker. Since fish depend on macroinvertebrates to survive in streams, a study of these organisms may give a further indication of the current health of the river.

PRCWA feels there is a false narrative being presented in this application by failing to admit to the stress level of the Parker River watershed. AECOM states in an initial report because of Water Management Act (WMA) limitations in the Ipswich basin, “groundwater sources in the Parker River basin must bear the burden of supplying the Town with water.”

There is reference that the Town of Ipswich will not be requesting additional withdrawals as the result of this well application. In May of 2018, a MEPA notification was filed indicating Ipswich was seeking an increase of their WMA permits from .98 MGD to 1.20 MGD.

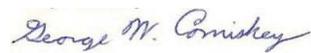
The applicant suggests Sustainable Water Management Initiatives (SWMI) compliance will be addressed when Parker River withdrawal permits are renewed in 2023. The Town of Georgetown just published notification last week in the local paper to begin the process for its permit renewals.

PRCWA did not support the new SWMI regulations authored by DEP. We objected that the safe yield analysis was unfair to coastal watersheds, which included as part of its calculations, estuary and marsh areas. SWMI did not account for the effects of Climate Change and drought.

The Parker River communities remain water poor. During the drought of 2016, water emergencies led the Town of Rowley to request Georgetown to supply them with water. Georgetown responded they did not have the water to give them. The same situation applies in the Ipswich basin. It is akin to robbing Peter to pay Paul. Other alternates must be looked at to supply Ipswich’s future needs.

In conclusion, I reiterate the fact an Environmental Impact Report is necessary to consider the harm that may be done to the wildlife that inhabit this section of the watershed. In 1980, a report published by The Department of Environmental Quality Engineering (now DEP) indicated Georgetown and other local communities would be suffering from a serious lack of water supply by 2020. History should guide us all.

Sincerely,



George Comiskey

VP, Parker River Clean Water Association

PO Box 798 • Byfield, MA 01922



www.Parker-River.org • 978-462-2551

February 26, 2019

Secretary of Energy & Environmental Affairs EEA,

Attn: MEPA office, Purvi Patel, EEA No. 15973

100 Cambridge Street, Suite 900 Boston MA 02114

RE: Proposed Municipal Supply Well Field, Lynch Site

Dear Ms. Patel:

The Parker River Clean Water Association has reviewed the responses to our concerns for the new well field at the Lynch site.

In response to the Town of Ipswich, the question of Bull Brook being an "intermittent stream" never arose during our June 2018 meeting. My question was to Ms. Halmen's observations of Bull Brook next to the proposed well field site during typical August conditions. The Water Director replied there was usually water in the stream, but no flow. Bull Brook reservoir was not mentioned in my letter to the Secretary.

Further clarification is needed on what is meant by, "DEP places Bull Brook in the Parker River Basin for administrative purposes." "Geographically, Bull Brook is a tributary of the Rowley River, which discharges to Plum Island Sound." And "is outside the Parker River basin." What is meant by "administrative purposes?" The Town should reference any information related to these statements above. To our knowledge, DEP used Bull Brook, the Rowley River and Plum Island Sound to calculate the safe yield for the entire Parker River watershed under the new SWMI guidelines.

The elevated levels of sodium and nitrates found during sampling should not be acceptable. The sources should be identified and remediated in a timely manner before proceeding to permitting. The people of Ipswich deserve answers to the sources of contamination before the possibility of these pollutants entering the distribution system, as this may affect the public health, safety and welfare of the residents.

Sincerely,

A handwritten signature in blue ink that reads "George M. Comiskey".

George Comiskey

VP/Director, PRCWA



IPSWICH RIVER  
WATERSHED  
ASSOCIATION

*The Voice of the River*

P.O. Box 576  
Ipswich, MA 01938

**February 12, 2019**

**Via Email & 1<sup>st</sup> Class Mail**

Ms. Purvi P. Patel  
Massachusetts Environmental Policy Act (MEPA) Office  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, Suite 900  
Boston, MA 02114

**Re: Proposed Municipal Supply Well Field, - IPSWICH; EEA#15973;**

Dear Ms. Patel,

Thank you for the opportunity to comment on the proposed municipal wellfield proposed by the Town of Ipswich listed in the January 23, 2019 issue of the *Environmental Monitor*. The Ipswich River Watershed Association (IRWA) is concerned about this proposal due to the potential impacts on streamflow and ecology of Gravelly Brook, Bull Brook and the downstream area of the Egypt River. This project is relevant to IRWA for several reasons. First, the Bull Brook headwaters are hydrologically connected to the headwaters of the Gravelly Brook sub-basin in the Ipswich River watershed such that these waters routinely intermingle depending on flow and withdrawals activity. Second, the Town of Ipswich has its water supply sources in both the Ipswich and Parker Basins. These waters are managed collectively such that withdrawals and use can and do affect both basins. Third, we administers the [Parker-Ipswich-Essex Rivers Restoration Partnership](#) (PIE-Rivers), a partnership of more than 20 municipal, state agency, and non-profit organizations, whose mission is to protect and restore the ecological resources of these watersheds within which the Ipswich project is located.

We have been actively engaged in the planning of this proposal for many months and fully agree with the town that it needs to improve the drought resiliency and redundancy of its water supply. We have advised the town on the permitting challenges associated with the current proposal and promoted alternatives that could make the town's water supply more resilient over the long term. We remain committed to supporting and working with the town in pursuit of less damaging and more resilient alternatives. However, it seems that the permitting hurdles that this project must overcome and the environmental impacts of this proposal may not have been adequately considered. As such, we urge that regulators consider the following issues during its review:

1. The current hydrogeological analysis is incomplete and does not accurately portray the proposed wellfield's impact on stream flow and the ecological resources of Bull Brook and the Egypt River.
2. The alternatives analysis was limited in scope and should be expanded to include the costs associated with this proposal.
3. The review of this project and environmental analysis needs to take into account the relatively new withdrawals in the Bull Brook sub basin since 1990 which were never adequately permitted.
4. Should the wellfield be permitted, its impacts need to be fully mitigated to protect streamflow as required by the Water Management Act (WMA) regulations.

Given the significance of these issues, we suggest that MEPA in consultation with the DEP Water Management Program urge the town to further investigate these issues and work with stakeholders to consider ecological impacts, conduct a more thorough alternatives analysis and consider the development of an Environmental Impact Report to provide the necessary information to make an informed decision. Before providing detailed comments on the application, we feel a review of the ecological resources of the sub-basin and prior permitting context are important:

#### Ecological & Permitting Context

The site of the proposed project is of outstanding and unusual ecological value. The proposed wellfield is a series of shallow, gravel-packed, stream-side wells on the banks of Bull Brook. The Brook joins with the adjacent Dow Brook sub-basin to form the Egypt River just downstream of the proposed wellfield. The Egypt River is an integral component of the series of coastal rivers and streams that come together to form the State-designated Great Marsh Area of Critical Environmental Concern (ACEC) which is the state's first and arguably most significant coastal ACEC. The Great Marsh and its coastal tributary streams are widely recognized as having global significance due to its high ecological resource value. The Egypt River is also a designated rare species habitat by the State's Natural Heritage Program.

As was extensively documented during the administrative appeals process for Town of Ipswich's Water Management Act (WMA) permit for its withdrawals in the Parker Basin (which began in 2006), Bull Brook was a thriving ecological system as recently as the late 1980's – early 1990's. At that time, the Brook was a cold water fishery, was regularly stocked with trout by the state, had healthy populations of fluvial species, and supported populations of anadromous River Herring and Rainbow Smelt. The town did not then use the Brook as an active public water supply. Since that time, the town began actively diverting the brook into the adjacent Dow Brook system to augment its public water supply withdrawn from that sub-basin. During the same period, a local farm which uses Bull Brook as an irrigation source dug two stream-side irrigation ponds and significantly increased its level of withdrawals due to a change in its crop plan and an increase in acreage farmed. Since 1990, groundwater withdrawals have also increased significantly in the sub-basin both in the form of private irrigation wells in new and existing developments as well as the new WMA permitted water system at the Turner Hill County Club. As such, the Brook can be dewatered below the dam for up to eight months per year; this impact has devastated the ecology of the Egypt River. [It should be noted that

except for the small private wells which are exempt from permit requirements, none of these newer withdrawals were adequately permitted, or were appealed but never appropriately resolved.]

Since the WMA appeals, IRWA, PIE-Rivers and its partners have been awaiting the resolution of those appeals to implement plans to restore the Brook to its 1990 condition focused on the restoration of stream flow as outlined in the PIE-Rivers [Action Plan](#). The proposed project therefore needs to be evaluated based on the cumulative impact of these withdrawals and should not go forward until these other appeals are adequately adjudicated and the impacts of those withdrawals on the Brook's ecology are mitigated as required by state law. The following is a summary of our specific concerns in the ENF and WMA permit application.

## Hydrology

In the ENF and WMA application, the applicant is claiming that the proposed wellfield has a "weak and indirect link to Bull Brook" and the brook and its aquifer are "separate almost mutually exclusive sources of water" and therefore will not have a significant impact on streamflow. We feel that the hydrological analysis in this regard was incomplete for the following reasons:

- The applicant did not have access to the immediate area across the brook from the proposed wellfield to determine its potential impact on groundwater and streamflow which would be required to make a definitive analysis.
- As was documented during the pump test, the neighbor's agricultural irrigation pond located approximately 500 feet away from the test well responded directly and immediately to the pumping, indicating a strong and direct hydrological connection to adjacent surface waters. This impact was reported to, observed by, and confirmed by the town's consultant, and shared with IRWA contemporaneously, yet was not considered in the analysis.
- The applicant quantified the predicted impact to streamflow based on modelling that did not take into account the impact of the withdrawals and land use mentioned above. For example, the above-mentioned farm has at least 4 withdrawals points above or adjacent to the proposed well location with a pumping capacity of over 500 gallons per minute. Thus, the percent depletion estimates provided by their analysis is far less than what would actually occur were these collective impacts taken into account.
- The fact that the stream was dry during the pump test invalidates the results of the test in terms of evaluating the impact to stream flow.
- The applicant claims that the presence of an aquaclude in the vicinity of the proposed well precludes the possibility of a direct hydrologic connection to the brook. As was mentioned above, the applicant did not have permission to adequately explore the immediate environs nor extended the investigation enough to locate its pinch points to determine the lateral and vertical extent of this aquaclude.
- It is well established that shallow aquifers such as this are intimately and directly connected to its stream. These connections serve to both recharge shallow aquifers such as this and maintain stream flow during dry periods. The entirety of the State's WMA sub-basin

classification system is based on this central tenant of basic hydrology and the limited analysis conducted here should not overcome this assumption.

- The applicant attributes the water quality issues in the test well to road treatment and upstream/adjacent land use. This attribution directly conflicts with the applicant's determination of a weak and indirect connection between the aquifer and the brook and supports the notion that the proposed source aquifer and surface waters are intimately connected as would be expected.

In addition, the applicant implies that Bull Brook may not be a perennial stream based on observations of a dry stream bed. The application also asks regulators to "put the proposed withdrawals in proper perspective" considering the brook sometimes goes dry, and, if it weren't dry, the flows would otherwise be captured by the town in the downstream reservoir. Bull Brook is listed as perennial by the USGS and located in an area of high percentage of stratified drift deposits; the brook is predicted based on the USGS StreamStats tool to be perennial with a relatively high base flow for sub-basin of this size. As a former cold water fishery, the Brook would not have run dry historically and is likely running dry as a direct response to the new withdrawals and changes in land use described above. Indeed, during the period of testing, the nearby country club, farm and private houses were all withdrawing water from the sub basin upstream of the observation point. Moreover, regulations require that stream flow be maintained for the benefit of downstream resources. Because the town's withdrawal from Bull Brook Reservoir was not adequately permitted, the town does not have the right to capture the entirety of the brook's discharge as it sometimes does currently. Base flow should be allowed to continue past the dam for the benefit of Egypt River.

#### Alternatives Analysis

We feel that the analysis was incomplete and did not adequately consider alternative sources or available water conservation measures, nor did it put these in context of the costs associated with the proposed project highlighted herein. For example, one reason cited for the new well is the decline in water quality and yield from its formerly largest groundwater source, Brown's Well. This well is located in the Muddy Run sub-basin and was historically the town's workhorse located in perhaps the town's highest yielding aquifer. Because groundwater withdrawals from Muddy Run do not have the degree of ecological impact as from Bull Brook, we have been advising the town to either maintain or even increase its withdrawals from that sub-basin to meet its water supply needs (as opposed to increasing withdrawals in Bull Brook). This could be accomplished by renovating and treating Brown's Well and/or developing new sources in the same aquifer. While we recognize the difficulty of finding suitable locations for new sources, there is a considerable amount of open land above the Muddy Run aquifer including a 300-acre parcel identified as one of the highest priority parcels on the Town's Open Space Bond list due to in part to its suitability for public water supply. Additionally, as part of the town's due diligence, they identified a potential new well site on town-owned land in this same aquifer. While it had some issues as compared to the proposed Lynch site, it still could be a viable alternative when negatives of the Lynch site are weighed.

Additionally, Brown's Well could be fitted with a filtration plant or the water could be piped to the town's Water Treatment Plant located less than a mile away. While each of these alternatives may be

more expensive or less desirable than the proposed well for certain reason(s), they may well become viable if considered in the context of the environmental impact and costs of the proposed project. The town has cited cost and the lack of available land as reasons it is pursuing a new source in Bull Brook as opposed to its Muddy Run options. However, in its analysis, the costs of the proposed ¾ mile water main and taking adjacent land by eminent domain to develop the proposed well would not be substantively different than those that would be incurred by improving/enhancing its Muddy Run sources. The analysis also did not appear to take into account additional negatives associated with the Lynch site including permitting challenges, local opposition, impact of mitigation measures and environmental impact.

Water conservation is always the first resort alternative to water supply concerns. We applaud the town's current water conservation program and generally good water use statistics. Components of its program such as the seasonal rate structure, leak detection, private well-by-law, membership in the Greenscapes Coalition and its most recent effort to pursue a net zero water use program are commendable. Despite being among the most progressive towns in the watershed in this regard, we feel that additional water conservation measures as part of an enhanced program could and should be implemented before environmentally damaging new supplies are considered. We recently engaged with the town on a project to develop and implement an enhanced water conservation and demand management program and look forward to that project to supplement its current efforts.

#### WMA Permitting

According to the WMA regulations, proposed new withdrawals such as this that will result in the change in a biological or groundwater classification can only be considered if there are no alternatives and if allowed, need to be fully mitigated. Given the impact on streamflow that existing and proposed withdrawals have, mitigation measures must prioritize restoration of stream flow including releases below the Bull Brook Dam (non-anthropogenic influences on stream flow notwithstanding) to protect downstream resources. While the overall safe yield (SY) for the Parker Basin could technically allow for increased withdrawals, the new WMA permitting scheme requires that factors such as season and location on the sub-basin scale be taken into account during the permitting process. Given that Bull Brook sometimes goes dry during the summer as indicated in the application, additional withdrawals cannot be permitted during seasonal low flow periods without mitigation.

The applicant is claiming that the median August flow for Bull Brook is 216 GPM (before consideration of the above withdrawals). As such, the 25% net depletion figure used in the SWMI regulations indicate that roughly 77K gpm would be available at this location yet the applicant is proposing to withdraw an average of 510 and up to 734 gpm, which is well in excess of the allowed depletion at this location. If properly conditioned to meet permit regulations, the proposed project may be less favorable than other alternatives. We urge the town's consultant to work with DEP to conduct this analysis to inform the feasibility of this project.

#### Miscellaneous Items

- The application indicates that the proposed project is not within a stressed basin. Bull Brook certainly meets this designation when the impact of the above withdrawals are considered.
- The application indicates the project is not within an impaired sub basin. DEP considers flow as impairment in its current water classification scheme so this sub basin should be considered impaired.
- The application states that there are no Outstanding Resource Waters (ORW) in the vicinity of the project. There are at least 2 potential vernal pools near the site and Bull Brook itself as a public water supply should be considered an ORW.
- The application states that the town is not seeking an increase in its existing WMA allocation. However, its allocation is still technically under appeal and the town has indicated in its recent permit renewal application for its Parker Basin sources that it will request an increase in its permitted volume. This conflict should be explained.
- The application indicates that there will be no impact to the coastal zone or endangered species habitat. While the project may technically be outside statutory setbacks, the proximity to these downstream resources, especially in light of the potential impacts described above should be considered by regulators.
- The application cites upstream agricultural withdrawals of the proposed wellfield as varying between 34K and 93K gpd seasonally. According to testimony provided by the farmer, agricultural pumping capacity exceeds rates of 500 gpm and during dry periods, pumps may run at this rate for 24 hours per day for multiple days which would dramatically exceed this volume.

### Comprehensive Water Resiliency Options

The proposed well field is being recommended as part of a comprehensive water supply resiliency analysis the town is undertaking which is laudable. In its application, the town indicates that it is pursuing the proposed well as a short term measure to improve the town's drought resiliency and redundancy while it continues to explore long term solutions to its water challenges. Given its potential environmental impact, the town should be encouraged to further investigate other options before investing more in this project. In addition to the Muddy Run alternatives, Ipswich should work with its legislative delegation, local partners and other towns to explore regional solutions. A series of recent WMA grant-supported projects conducted by other Ipswich Watershed communities determined that due to the new WMA regulations and the risks of climate change, the region's water supply are at significant risk. Alternatives to the dilemma include increasing storage, importation of water from the Massachusetts Water Resources Authority, more water sharing between communities and enhanced water conservation programming, all of which could be viable. While these efforts may be challenging, expensive and require towns to work cooperatively, the region's communities as well as the environment would benefit in the long run. Ipswich, as the least resilient community in the Ipswich River Watershed in terms of water supply, would be in an ideal position to help galvanize this effort and IRWA and its partners stand ready to assist in this endeavor. Not only would this effort help to make our water supplies more resilient and robust, they could lead to a less onerous regulatory environment for everyone.

Please incorporate these comments into the public record and please contact me if you have any questions about these comments. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Wayne Castonguay". The signature is fluid and cursive, with the first name "Wayne" written in a larger, more prominent script than the last name "Castonguay".

Wayne Castonguay  
Executive Director

CC: Vicki Halman, Town of Ipswich  
Duane LaVangie, DEP  
George Commiskey, PRCWA  
Julia Blatt, Mass Rivers Alliance  
Doug Denatele, AECOM  
Ipswich Conservation Commission



# TOWN OF IPSWICH

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## IPSWICH, MASSACHUSETTS 01938

AGRICULTURAL COMMISSION

February 14, 2019

Ms. Purvi P. Patel, EIT  
Massachusetts Environmental Policy Act (MEPA) Office  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Subject: Proposed Water Department wellsite  
EEA NO.15973

Dear Ms. Patel:

On February 4, the Ipswich Water Department held a meeting at its High Street office to discuss a proposed new water source at the so-called Lynch Site on Linebrook Road. This project was brought to the attention of the Ipswich Agricultural Commission by Planning Board staff. Accordingly, I, as Chair of the Commission, as well as several members of the Ipswich agricultural community, attended the meeting. Other attendees besides myself included you, representatives from Ipswich Water Department and other town officials, from the state legislature, and from the Ipswich River Watershed Association. The purpose of the meeting was to obtain information about the project, and to solicit comments from attendees and other interested parties.

The Ipswich Agricultural Commission discussed this project at its meeting on Wednesday, February 6. We fully understand the need for the town to provide sufficient sources of reliable and safe drinking water that meet the Town's growing needs. However, we are concerned about the potential impact of this particular project on some of our open space and farmland. We also believe that there are alternative sources of water that the Water Department has not fully considered.

Specifically, we see two important issues regarding the proposed project location.

The first concerns the land that currently is leased by Michael Marini for growing strawberries, and on which the proposed well would be sited. Because of the state-mandated restrictions on fertilizer application within the 250-foot-radius wellhead protection zone, most of this site would no longer be usable for agricultural purposes. This obviously would be a loss for Marini's

operations, and since his farm and farmstand are significant contributors to the Ipswich economy, it would be an economic loss to the town as well. The Zone One protection area will also virtually eliminate agricultural operations on portions of a neighboring farm, which is currently owned by the Galicki family.

Secondly, we believe the proposed well will have a significant environmental impact. When flow tests were conducted on the trial wells on August 27, 2018, it was observed that the water level in a pond on nearby private property simultaneously dropped by a measured 34 inches. This clearly demonstrates that the project would adversely affect the both the groundwater and surface wetland resources well beyond the project site. Furthermore, since the pond water is used by Marini for agricultural purposes, the proposed well would have significant additional consequences for his operations on his own land.

During the course of the meeting, several participants asked if alternate water sources had been considered. These alternatives included treatment of the water from existing but underutilized sources (including the Fellows Road well) to reduce substances such as manganese to allowable levels, and consideration of other water sources within the town. It was not clear that these alternatives have been evaluated.

In summary, the Ipswich Agricultural Commission believes that the proposed water development project on Linebrook Road will have adversely impact the town's agricultural base, its economy, and our environment, and that alternatives to this proposal have not been fully evaluated. We recommend that the Water Department look into other solutions to meet its water needs.

Sincerely,

(Signed)

Jay Stanbury, Chair  
Ipswich Agricultural Commission.

Cc:

Senator Bruce Tarr  
Representative Brad Hill  
Tony Marino, Ipswich Town Manager  
Nishan Mootafian, Ipswich Board of Selectmen  
Ethan Parsons, Ipswich Planning Department  
Vicki Halman, Ipswich Water Department  
Alicia Geilan, Ipswich Conservation Commission

LYNCH, DESIMONE & NYLEN, LLP

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JOHN M. LYNCH, P.C.  
ERNEST P. DESIMONE  
RICHARD A. NYLEN, JR.  
STEPHEN W. DECOURCEY  
SHANNON MICHAUD

February 11, 2019

OF COUNSEL

JAMES W. MURPHY  
WAYNE H. SCOTT

Via Email & 1<sup>st</sup> Class Mail

Ms. Purvi P. Patel  
Massachusetts Environmental Policy Act (MEPA) Office  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, Suite 900  
Boston, MA 02114

**Re: Marini Farm, Ipswich, MA 01938  
Proposed Municipal Supply Well Field, Lynch Site ENF – IPSWICH; EEA#15973;  
Comment Letter**

Dear Ms. Patel,

Thank you for the opportunity to comment upon the above-referenced ENF. This office represents Marini Farm with respect to the Town of Ipswich request to withdraw up to 734,000 gallons of water per day from a new source known as the Lynch site at 215 Linebrook Road in Ipswich. Marini Farm is a third generation farm located on Linebrook Road which relies upon the Lynch well field watershed as one of its primary water sources for its farm land. Marini Farm is concerned that the proposed withdrawal from the Lynch well field will have a significant impact to its farm operation and will impact other agricultural uses in the area. We request that the MEPA and Water Management Act review process take this impact into account and ensure that the water sources are protected for sustainable agricultural purposes as contemplated by the Water Management Act and its regulations.

The concern is heightened by the ENF statement that the new wells on the Lynch site can provide up to one-half (1/2) of the Town's average daily demand which will place strain on the agricultural water source.

Marini Farm, located at 259 Linebrook Road, is owned and operated by Vincent and Michael Marini and has been an active part of the Ipswich farming community since 1928. Marini Farm currently grows more than 200 acres of fruits and vegetables which are supplied to Ipswich residents and other surrounding communities. Marini owns or leases 250 acres of farm land for its operations throughout the community. Marini Farm produce corn, tomatoes, beans, melons, radishes, blueberries, raspberries, strawberries, beets, carrots, chard, squash, pumpkin, lettuce, peppers, eggplant, cucumbers, onions, garlic, kale, cabbage and broccoli and is an Ipswich

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institution. The ENF filing recognizes that 3+ acres of the Lynch well field site are presently leased for farm purposes on a year to year basis, which happens to be Marini Farm. Marini Farm recognizes that the Town of Ipswich is within its rights to terminate the lease of the 3 acres to Marini Farm depending on the well operations.

Marini Farm has a surface water fed pond at its farm. It does not rely upon municipal water and is engaged in important infiltration practices to conserve water. The third generation farm has adopted management practices in the past ten (10) years to conserve and infiltrate water such as irrigation timing, crop rotation, plastic mulches, and have installed extensive drip irrigation systems. Through the drip irrigation process Marini Farm manages and uses water safely and efficiently, using 50% less water than conventional overhead irrigation. Marini Farm supplies small amounts of water directly to the roots of the plants. The water is directed under the soil to eliminate evaporation and also prevents soil erosion and nutrient runoff.

Marini has leased the Galicki/Richard property located at 231 Linebrook Road for water supply purposes for thirty (30) years since 1987. The Galicki/Richard property is located less than a mile from the Marini Farm. The Galicki/Richard property is a vital part of the Marini Farm operation and a crucial asset to the sustainability and the future of the Marini Farm. The Galicki/Richard property has always been a farm and is an important part of the agricultural community in Ipswich. The Galicki/Richard property is adjacent to the proposed well field at the Lynch property.

As a vegetable farm there is no more important resource than water. The Galicki/Richard property has a large irrigation pond that has fed the Marini Farm pond and facilitated the production of vegetables on the Marini Farm for decades. Marini Farm has the pumping capacity to withdraw approximately 200 gallons per minute of water from the Galicki/Richard pond to keep the Marini Farm pond functional. Marini Farm's concern is that the drawdown test of the well on the Lynch property demonstrated a direct impact to the irrigation pond on the Galicki/Richard land which is located only 700 feet away from the pumping test site. The impact on the Galicki/Richard irrigation pond from the testing was rapid and drastic, almost emptying the pond completely. We believe that the pump test was set at 300 gallons per minute which is only 60% of the volume cited in the application (510 gallons per minute).

The impact shown on the Galicki/Richard water supply evidences that the technical analysis of on-site and off-site impacts is incomplete. The Town has not collected enough data to show a complete analysis of the impact of the drawdown upon surrounding land uses and water sources. The observed impact on the Galicki irrigation pond leaves too many unanswered questions to move forward with such a large water withdrawal in this critical area at this time. The pump test held in August 2018, had a major impact on the adjacent irrigation pond. Interestingly, it was an unusually

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wet season and the pond use was less than normal for irrigating crops for Marini Farm. The water level of the pond was at or above the normal seasonal level before the well pump testing began.

During the August testing period the Galicki pond had a rapid decrease in its water level. When Mike Marini observed the reduced water levels in the pond he notified the Town immediately and voiced his concern. At the time of his observation, the pumping test had not been completed. The Town consultant made a site visit to respond and a marker was placed in the irrigation pond to see if levels would continue to decline with the testing and whether the pond would recover. There was no irrigation use during this period. The water levels continued to decline during the final days of testing. The pond eventually recovered to a normal seasonal level within twelve (12) days.

The Marini Farm's concern is obvious. When the Lynch well is pumping, the water supply available for the adjacent farming use will be drastically reduced and may endanger this 90 year old business and other farm lands which are vital to the Town of Ipswich for vegetable produce and employment.

### **MEPA Trigger and ENF**

The Town's request to withdraw up to 734,000 gallons of water per day triggers the Water Management Act approval for a new water source approved under 310 CMR 36.00. We look to MEPA to ensure that the impacts and alternatives are addressed by the Town and MassDEP before going forward with the permit in accordance with the Water Management Act regulations.

The Project description in the ENF considers the impacts to the adjacent surface water supply, Bull Brook Reservoir, but does not address other adjacent land use impacts with only one reference to farm land. The Project description prepared by the MassDEP recognizes the adjacent farm lands and that thirty (30%) of the Zone 1 protection radius for the Lynch well field consists of cultivated fields. Focus on the impact to agricultural lands is critical.

### **The Water Management Act and Its Regulations**

The general purposes enunciated under the Water Management Act at Chapter 21G and its regulations at 310 CMR 36.00, recognize that water sources are public resources that require sustainable management practices for the well being and safety of its citizens, protection of the natural environment and for economic growth. (310 CMR 36.02) The review and approval of water withdrawals requires a demonstration by the Town to the Department to assure that providing an additional water supply within Ipswich will not have an unintended consequence of harming sustainable agricultural operations.

As noted above, the Town's ENF project description states that the wells are "intended to augment the Town's existing water supply sources" but acknowledges that the Town believes that this source can provide up to one-half (1/2) of the average day's demand. The ENF suggests that the Town has concluded that the Lynch well field is the answer to current and future water source needs. Further, a review of the Water Management Act Permit Amendment application on the attached Form FD2, which projects withdrawal, suggests that the Lynch well will operate 365 days a year beginning in 2021 and will withdraw 300,000 gallons a day or up to 10,950,000 gallons a year.

The ENF does not address the water withdrawal impacts analysis required by the regulations. 310 CMR 36.21 requires the permit application for the new water source to include "a detailed evaluation of the potential effect of the withdrawal on ". . . public drinking water supplies, water quality, groundwater recharge areas, wetland resource area, fish and wildlife agriculture and other withdrawal points . . ." While the Town's project description and the MassDEP project description both identify farm land uses, the ENF does not include any information regarding the impact of the proposed withdrawal on economic development, the creation (or loss) of jobs or the impact of the proposed withdrawal on agriculture pursuant to the requirements of the Water Management Act and 310 CMR 36.26.<sup>1</sup>

The provisions of 310 CMR 36.26(1) are quite specific in requiring that the Department's review of the application for the new source withdrawal shall consider . . . "the use to be made of the water proposed to be withdrawn and other, existing, presently permitted or projected uses of the water sources from which the withdrawal is to be made . . ." and reasonable practices of public drinking water supplies, water quality, wastewater treatment capacity, groundwater recharge areas, navigation, hydropower resources, water based recreation, wetland habitat, fish and wildlife, agriculture and flood plains" (*emphasis supplied*)

The analysis of the above criteria by the Town necessary for the MassDEP to make its findings is missing from the ENF. This analysis is critical to MassDEP's authority to issue withdrawal permits and attached conditions pursuant to 310 CMR 10.26(2) and 310 CMR 26.27 to:

"impose limitations on the proposed withdrawal, including but not limited to, denial or reduction of the requested volume, offsets, management plans and operational restrictions and other conditions it deems necessary to further the interests of M.G.L. C.46 and 310 CMR 36.00."

The Water Management Act Permit Application project narrative (absent page numbers), attached to the ENF references a DEP report regarding agricultural use of water sources in Ipswich

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<sup>1</sup> We intend to comment on the permit application to MassDEP pursuant to 310 CMR 36.25.

Ms. Purvi P. Patel  
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from the Parker River and the Ipswich River Watersheds during the past years. It states that between 34,000 gpd and 93,000 gpd are used by agricultural operations depending on wet or dry conditions. The referenced DEP report was not attached to the ENF and we cannot speak to the results. However, it is clear that the projected numbers are far below the 200 gallons per minute pumping from the Galicki/Richard pond by Marini Farm that takes place. We encourage MassDEP and the Town to make decisions based upon the most up to date information. Interestingly, the context suggests that the agricultural uses are a threat to and are in conflict with municipal water needs by “reducing stream flow and reservoir recharge.” This is contrary to public policy and to the regulatory and statutory provisions of the Water Management Act. The regulations at 310 CMR 36.26 do not consider agricultural uses to be confiscatory and encourage communities to account for and incorporate water uses associated with economic development and farm land/agricultural uses. That cooperation with agricultural uses is appropriate and necessary at this time.

### **The Alternatives Analysis Needs To Be Expanded**

The MEPA ENF requires an alternatives analysis:

“to consider what effect change the parameters and/or siting of a project, or components thereof, will have on the environment . . . to avoid or minimize damage to the environment. Examples of alternative projects include alternative site locations, alternative site uses and alternative site configurations.”

The ENF included an alternatives analysis that considered only the expansion of existing sources without discussing the impacts to the nearby farm land, including Galicki and Marini Farm. The Project description included in the ENF recognizes the farm land north of the well field, northwest of the well field, east of the well field and south of the well field without describing impacts to the land.

The Department’s regulations at 310 CMR 36.25 and 310 CMR 36.30 outline the factors and criteria reviewed when considering new sources. The Department is required to consider the protection of land values, including agriculture, economic development and jobs. We do not see that discussion in the ENF.

### **Conclusion**

At first blush, the development of this new water source on Town-owned property appears beneficial to the Town of Ipswich. However, the purpose of MEPA is to share data and project descriptions toward collecting agency and public comments on projects prior to agency permitting decisions. We are struck by the fact that the ENF acknowledges the farm lands to the east, west,

Ms. Purvi P. Patel  
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south and north of the proposed well field with little more than a passing gesture. Ipswich has a proud and important farming community that cannot be left out of the regulatory discussion. We have provided information that the Marini Farm pumps up to 200 gallons per minute from the same watershed that serves the Lynch wells.

Marini Farm does not believe that the ENF and the permit application address the impacts of the proposed drawdown on nearby agricultural lands as required by the Water Management Act regulations and the application should be deemed incomplete.

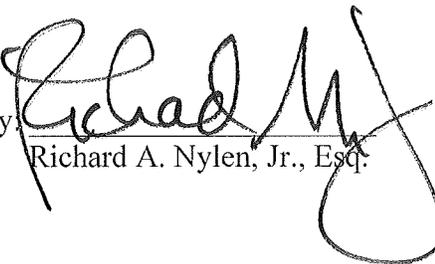
We note that the comment period on the Town's water withdrawal application runs concurrently with the MEPA review. On this basis, we are copying the Town of Ipswich and MassDEP with these comments. We trust that MEPA will consider the Marini Farm comments when the Secretary issues the Certificate on the ENF to ensure that the maximum allowable withdrawal volume be limited to take into account the water withdrawal necessary for the sustainable agricultural operations pursuant to 310 CMR 36.26 and 310 CMR 36.28.

Please contact me if you have any questions.

Thank you.

Sincerely,

Marina Farm,

by   
Richard A. Nysten, Jr., Esq.

RAN/kad

cc: Marini Farm  
Ms. Vicki Halmen, Ipswich Water & Sewer Department  
Mr. Duane Levangie, MassDEP  
Mr. Erick Galicki  
Mr. Doug DeNatale, AECOM

February 11, 2019

Ms. Purvi P. Patel  
Massachusetts Environmental Policy Act (MEPA) Office  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, Suite 900  
Boston, MA 02114

RE: Galicki / Richards Farm – Ipswich MA 01938  
Proposed Municipal Supply Well Field – Lynch Site ENF – Ipswich; EEA#15973;  
Comment Letter

Dear Ms. Patel:

Thank you for the opportunity to comment upon the above referenced ENF.

I am reaching out to your office on behalf of the Galicki / Richards farm property located at Linebrook Road in Ipswich MA. Our farm has been in operation for the use of agriculture from May 10, 1929 until present day. Currently the Marini Farm leases a large portion of the property for the use of growing fruits and vegetable to supply their farm stand and whole sale to other farm stands and markets in the area.

The other portion of the field area is used for cultivated hay crops for the local equestrian stables and landscape contractors.

The Galicki / Richards farm is a third generation family which owns and operates this property as a farm at the 231 – 233 Linebrook Road location. Our current and future plans are to operate this property for agricultural purposes.

In the past year the Town of Ipswich which owns the Lynch property has been pursuing a future municipal water supply system for the Town of Ipswich to add to their currently aging and inadequate system.

During the research and development of the well site located adjacent to our farm property, which is approximately 750' from our irrigation pond, the Town of Ipswich performed test pumping for a 15 day period in mid to late August 2018. During this time the testing company pumped approximately 300 gallons of water per minute for a period of 24 / 7. During this testing our irrigation pond dropped to a level where we would have had insufficient water available for crops needing irrigation.

Last year during this time there was virtually no irrigation of crops needed due to sufficient rain during the season. Although, if during this time we had drought conditions then our irrigation pond would have been pumped dry in a matter of hours.

The Town of Ipswich is seeking to obtain permitting from the DEP for 510 gallons per minute of flow. This action would put the Galicki / Richards Farm out of business for agricultural purposes as well as the Marini Farm.

This impact would also effect the wetland area surrounding the nearby perennial stream known as Bull Brook.

During the period of test pumping by the Town of Ipswich we did notify the Town Consultant and Water Department and voiced our concerns.

A re-evaluation of the well site located on the Lynch Property needs to be reconsidered. This well site will definitely have an adverse / non-reversible effect on the operations at the Galicki / Richards Farm.

Thank you for your consideration and should you have any questions, please do not hesitate to contact me at 508-641-0215 or [galickielectrical@verizon.net](mailto:galickielectrical@verizon.net).

Sincerely,

Donald E. Galicki  
Galicki Farm

## Patel, Purvi (EEA)

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**From:** Carolyn Britt <cjbritt@comcast.net>  
**Sent:** Thursday, February 14, 2019 4:19 PM  
**To:** Patel, Purvi (EEA)  
**Subject:** RE:Comments on EEA#15973 Proposed Municipal Supply Well Field, Lynch Site – IPSWICH

Dear Ms. Patel,

Thank you for holding a consultation in Ipswich regarding EEA#15973 - proposed municipal supply well field at the Lynch site. My comments address negative outcomes from development of the new well, and possible alternatives.

**Further constraints on agricultural activities:** As were many of the other attendees at the consultation, I am concerned about the impact on important agricultural activities in town. The Marini Farm is a key business in town, and one which provides a strong identity for the town. Literally everyone shops there during the season. Expanded cultural activities on the farm are enjoyed by all, including many people from surrounding towns. Marini farm has lost about 10 acres of land they have tilled to a Chapter 40B development south of downtown (currently in the permitting stage in the ZBA), and another approximately 10 acres of land they have tilled to an open space subdivision further in on Linebrook Rd. currently going through permitting with the Planning Board. The possibility of losing even more land to their agricultural activities could be a huge blow. The loss of the well-head area is not as profound as the possibility that regulations would change further limiting agricultural activities within a larger area around the well-head. This could result from a general change in the required size of Zone 1s, or could result from contamination from agricultural activities identified through water testing at the well site. This would be a very negative outcome to the Marinis and to the town.

Increased competition for water between residential and agricultural users was clearly laid out for you at the consultation. The farmers at the consultation also showed the very real impact on their activities as increased pumping to meet residential demands reduces the level of groundwater and decreases what is stored in farm ponds.

**Alternatives for improving the function of existing water supply:** Greenwood Creek, a tidal stream also fed by the outflow of the waste treatment plant, defines the back boundary of my residential property. With rising sea levels, it can't be many years before the discharge at sea level will need to be relocated so as not to be flowing all over the back yards of abutters to the salt marsh. Communities have been using land disposal for sewer waste for many years, and it was discussed as a potential in Ipswich many years ago for just the reason we are discussing - to recharge the groundwater. Has this option been considered in as an alternative to a new well-increasing the groundwater and thereby water availability in the existing watershed and its water sources?

Finally, I have a 2500sf vegetable garden that is watered by drip irrigation with town water. Averaging this use in with our residential use, our per capita daily use is still about 10gpd less than the average Ipswich resident. This suggests that there is a significant water supply that can be found by aggressively marketing conservation equipment and practices. I am sure there are other ways to estimating how much can be saved through conservation.

Thanks for your attention to my comments.

Carolyn Britt

1 Shagbark Woods

978-356-9881

## Patel, Purvi (EEA)

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**From:** Kerry Mackin <kerrymackin@gmail.com>  
**Sent:** Monday, February 11, 2019 12:31 PM  
**To:** Buckley, Deirdre (EEA); Patel, Purvi (EEA)  
**Subject:** Comments on ENF  
**Attachments:** Ipswich Well ENF - comments.docx; BullBrook-StreamStats2.pdf; UpperBullBrook-StreamStats.pdf; IpswichParkerFlowStats-SafeYieldAnalysis.xlsx

Hello,

Attached are my comments on the Town of Ipswich ENF for a new wellfield on the Lynch property (EEA #15973). I am also attaching two Streamstats analyses of flow regimes at locations on Bull Brook, and an analysis of flow statistical data provided to me by MassDCR Office of Water Resources several years ago, in relation to the development of a safe yield methodology.

I would also like to know what level of review was conducted by MEPA, if any, of the MassDEP safe yield methodology that they adopted in 2014. I ask because it clearly does not comply with S. 61 of MEPA.

Thank you for your consideration and any information you can provide regarding MEPA review of the safe yield methodology.

Sincerely,

Kerry Mackin  
Ipswich, MA

February 10, 2019

Director Deirdre Buckley  
Analyst Purvi Patel  
MEPA Office

Reference: 15973 ENF for Proposed Municipal Wellfield on Lynch Property, Town of Ipswich

I am writing in response to the Environmental Notification Form filed on behalf of the Town of Ipswich, to allow drilling new wells in the Bull Brook Sub-basin. There are significant concerns about the environmental impacts of the proposed wells, so I urge the MEPA office to require the preparation of an EIR.

I have some significant concerns about statements in the ENF.

- As background, the Parker River Watershed is extremely important ecologically, as it is comprised of extensive areas of the Great Marsh Area of Critical Environmental Concern, BioMap Core Habitat, Priority Habitats of threatened and endangered species, and includes the Parker River National Wildlife Refuge. Therefore consideration of the impacts of water withdrawals on the region's ecology is particularly important.
- Despite the ENF claim that the Parker River's classification as a stressed basin is not relevant, it is highly relevant. In fact, the state website currently states that it is necessary to "Develop a better understanding of why the Parker River Watershed's flow regime is stressed." (<https://www.mass.gov/service-details/parker-river-watershed>). The state previously invested public funds into studying the Parker River low flow problems. A very significant reason is that water withdrawals exceed the river's capacity, and are highest during summer dry periods/droughts, as we saw in 2016 when the USGS streamflow gauge on the Parker River recorded flow of zero cfs. While there is no USGS gauge data for Bull Brook or the Egypt-Rowley River sub-basin, zero flows also happen regularly in Bull Brook, typically for months each year downstream of the reservoir, and often upstream of the reservoir as well, which of course negates the replenishment of the reservoir. Pumping more groundwater from the sub-basin will make this situation worse.
- The ENF says that there are no impaired waters in the vicinity of the proposed wells, but also reports that Bull Brook is often dry and was dry during the pump test. These two statements are inherently contradictory and indicate that low or zero flows are a frequent occurrence and indicate the need for additional investigation. Since the brook is repeatedly dry, it is impaired, whether or not DEP classifies it as such. Since they report that it was dry during the pump test, that in itself is a problem that suggests the test results as reported cannot fully and accurately reflect the interaction between surface and groundwater in the vicinity of Bull Brook.
- I recognize that MassDEP is responsible for designating impaired waters under the Clean Water Act, meaning the waters that do not meet designated uses for (Primary Recreation, Secondary Recreation, Fish Consumption, Aquatic Life, Shellfish Harvesting, Drinking Water, and Aesthetics). Obviously, a perennial river without water is impaired, whether or not DEP designates it as such. Bull Brook is classified by USGS as perennial, and the Streamstats program reports that there would be perennial flow – even the 99<sup>th</sup> percentile flow – both upstream near the proposed well and downstream of the reservoir, if it were not for water withdrawals. (Streamstats analyses attached.)
- Observations of the dewatering of a pond near the proposed well site were made at the time of the pump test. This is evidence that refutes the town's claim that an aquiclude prevents ground-surface water interaction. This raises questions about the hydrology of the sub-basin. Due to the discrepancy between observations and the ENF's claims, there needs to be a more thorough investigation.
- The ENF claims that the only Outstanding Resource Waters within ½ mile radius of the proposed well site is the reservoir. However, this is not accurate; there are several vernal pools within the ½ mile radius as well, and the proposed well poses a threat to them.

- Bull Brook was historically a coldwater fishery, but brook trout were wiped out downstream of the reservoir when the town reconstructed the dam and stopped flow downstream in the late 1980s. (The ENF reports that the Bull Brook Reservoir was constructed in 1923, but should also mention that it was not used for decades until the dam was reconstructed and raised higher in the late 1980s.) Brook trout upstream of the reservoir reenter from Gravelly Brook in the Ipswich River Watershed, but are killed off by the repeated drying up of Bull Brook. Smelt spawning downstream on the Egypt River is also impaired due to reduced flow. There is need for a comprehensive evaluation of the ecological damage from the existing and proposed water withdrawals; this must be part of the scope of an EIR.
- The boundary between the Bull Brook sub-basin and the Ipswich River Watershed is “fluid,” by which I mean that there are times when water flows from the Ipswich basin into Bull Brook. (See Map 1, shown below, which shows waterways crossing the watershed boundary.) As mentioned, there is also some fish movement, including brook trout, between the Gravelly Brook sub-basin in the Ipswich River Watershed and Bull Brook; however, those fish die quickly in the depleted water environment of Bull Brook. I am concerned that further tapping into the Bull Brook sub-basin may also have a negative hydrological impact across the watershed boundary. Given the fragile, overallocated nature of the Ipswich Basin, as well as the Bull Brook sub-basin, this warrants further investigation.
- The ENF claim of an aquiclude, and contradictory observations, also suggest that further geohydrological investigation is needed. The ENF suggests that recharge of the Bull Brook sub-basin’s groundwater comes from elsewhere and that it doesn’t follow general hydrological principles regarding surface and groundwater interaction. If the recharge is from elsewhere, we need to know: from where? From the Ipswich River Watershed? Given the proximity of the proposed withdrawal site to the highly-degraded, overallocated Ipswich River Watershed, the possibility of a hydrologic connection there needs to be further investigated.
- The sub-basin water budget is in serious deficit mode, especially in summertime, when water resources are most limited. In addition to the municipal supply, there is a farm in the sub-basin which withdraws substantial amounts in summertime (sufficient to warrant permitting under the Water Management Act) as well as private use for landscape irrigation, and a golf course near the watershed boundary. These uses draw the largest amount of water from the sub-basin during dry summer periods – exactly when the natural environment of water is most stressed and can least afford water losses. There is also very little recharge of the water the town withdraws from the sub-basin; almost all is transferred out of the sub-basin, and much of it is discharged out-of-basin into Greenwood Creek (in the Ipswich River estuary) via the sewer system, or subject to evapotranspiration if used for irrigation. The result is a severe water deficit in the Bull Brook sub-basin, particularly in summertime and especially during droughts. Obviously, this puts at risk a municipal water supply that depends on the same limited resource. We should not be increasing that dependence and risk.
- Another key point that needs to be made is that the safe yield methodology adopted by MassDEP in 2014 does not represent a yield that is ecologically safe. In fact, the opposite is true. If the DEP “safe yield” were fully withdrawn from every river basin in the state during a significant (but not worst-case) drought, flows would fall below the 25% depletion of August median threshold that scientific studies for the Sustainable Water Management Initiative found result in severe ecological degradation; this is true for every river in the state. Both the Parker and Ipswich Rivers already suffer extreme low flows due to water withdrawals, even in non-drought years, and both experienced extensive dry conditions and ecological damage during the drought of 2016. **The DEP safe yield methodology certainly does not comply** with this portion of MEPA (Ch. 30, S. 61): “All agencies, departments, boards, commissions and authorities of the commonwealth shall review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and shall use all practicable means and measures to minimize damage to the environment. Unless a clear contrary intent is manifested, all statutes shall be interpreted and administered so as to minimize and prevent damage to the environment. Any determination made by an agency of the commonwealth shall include a finding

describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact.” Nor does the methodology consider climate change, as required in the next paragraph of that section.

- The safe yield methodology also does not address the need to consider geographic scale, as MassDEP’s Technical Analyst, Thomas Lamonte, wrote was necessary in a prior review of DEP’s failed efforts to come up with a safe yield methodology. As a result, the 2014 methodology allows a disproportionate amount of water to be withdrawn from small sub-basins, as is happening already in the Bull Brook sub-basin. Allowing installation of additional wells in that small sub-basin will make that problem worse. The sub-basin just downstream of the Bull Brook Reservoir dam has a drainage area of 2.34 sq.mi. and the location of the proposed well is at a location with a drainage area of about 1.5 sq. mi. (see Streamstats pages attached). Even if the flawed MassDEP safe yield were valid (which it is not), if it were based on cubic-feet-per-square-mile, this would indicate that the entire sub-basin yield, on an average annual basis, would be 428,000 gpd and the upper sub-basin yield in the vicinity of the proposed well site would be ~274,000 gpd. That is a year-round average figure, but less water is available, even though more water is withdrawn, in summertime. Both these figures are far less than the current withdrawals. This suggests that drilling another municipal well there is nonsensical.
- USGS developed the Sustainable Yield Estimator as a tool to specifically calculate the amount of water that can safely be withdrawn from any sub-basin or watershed location, while taking into account the amount of water needed to be retained to support ecological and other instream uses. In fact, when USGS originally proposed that project, it was proposed as the Safe Yield Estimator, but DEP insisted that they change the name. There is a note below regarding the SYE. The tool could certainly be used to calculate an ecologically safe, sustainable withdrawal limit for Bull Brook sub-basin.
- The safe yield methodology also does not account for non-registered and non-permitted withdrawals, such as those by Marini Farm and a private property’s landscaping that both draw from the Bull Brook sub-basin. I have photos of the private property with many irrigation heads going full blast, to the point where water was flowing down the pavement, on August 3, 2016, at the same time the town was experiencing severe water shortages that eventually led to the declaration of a water emergency. Marini Farm has numerous pumps that can pump 500 gpm from Bull Brook, and several irrigation ponds; it uses all of them during peak demand periods, drawing (at least) hundreds of thousands of gallons from this small sub-basin – with no regulation by MassDEP, and no accounting for this water loss in its flawed safe yield methodology.
- The ENF reports that the August median streamflow in Bull Brook is 216 gallons per minute. According to the scientific findings of USGS/DFG in the SWMI process, depleting August median streamflow by 25% or more is the threshold for “serious degradation” (biological categories 4 and 5). If so, then only 54 gallons per minute – total - could be available without causing serious degradation (25% of 216). That is equivalent to 77,760 gallons per day, which is just over 1/10<sup>th</sup> of the amount that the ENF claims is the “calculated approvable yield” for the new well (734,000 gallons per day). That is a huge discrepancy. The proposed pumping rate is almost 10X more than Bull Brook can support, based on the state’s scientific findings – and that doesn’t account for the water already pumped by the Mile Lane Well nor the withdrawals from the reservoir.
- While the ENF claims that the depletion from the new well would be less, that is based on their calculations based on the pump test results, which are questionable at best. Their figure also does not consider the cumulative withdrawals in that determination.
- The depletion of Bull Brook is already significant and ecologically degrading. As admitted in the ENF, the brook is already dry frequently in summer, upstream of the reservoir, indicating the severe ecological degradation due the withdrawals upstream of the reservoir – and also the loss of recharge to the reservoir, making it more vulnerable to failure. I will also point out here that the firm yield approved by MassDEP for this reservoir is not accurate; the actual firm yield is substantially lower. I

was informed by a former water department employee that the town was told of the inaccuracy years ago, but did nothing to correct it.

- The ENF also states: “The discussion of streamflow diversion due to pumping should be put in proper perspective. In most cases, any volume of water that is diverted to the wells in dry times is water that would otherwise flow 2,000 feet downstream to recharge the Town’s surface-water supply (Bull Brook Reservoir).” I will grant that the reservoir captures water that would otherwise flow downstream, and as a result kills off the downstream section of the river. However, the ENF statement is somewhat misleading, because it implies that pumping the river dry upstream is no big deal since the water will just go into the reservoir. This ignores the ecological values associated with water flowing in Bull Brook upstream of the reservoir continually throughout the year, as it would do were it not for excessive water withdrawals.
- “The USGS topographic map indicates that Bull Brook is a perennial stream. However, the Ipswich Utilities Department observes that Bull Brook opposite the Lynch Site is often without flow in the summer.” (from ENF, p. 10). Scientific studies (such as reported in Streamstats) as well as historical records indicate that Bull Brook did not run dry prior to its use for the town’s water supply. In fact, when the Town of Ipswich was first trying to develop a public water supply in the late 1800s, there was significant controversy about tapping into Bull Brook as a water source, largely due to fears by nearby farmers that there would be conflict between their agricultural uses and public water supplies. However, a historical report indicated that even with agricultural use, the brook still flowed. **“A special town meeting was held and it was voted to install the water system. And for years cows have been drinking from the brook. But the old brook still flows.”** From Harold D. Bowen, *Tales of Olde Ipswich*, Bay Printing Company.
- The ENF states that there are no impacts to the coastal zone (p. 12). However, the Plum Island Ecosystems Long Term Ecosystem Research project (PIE LTER) has found that depletion of freshwater flow to the Great Marsh has a number of adverse ecological impacts.

The ENF indicates that the Lynch site was chosen due to cost as well as water quality and availability. However, I would note that part of the proposed project infrastructure is construction of a .72 mile water main from the wellfield to the treatment plant, located downstream of the reservoir. The distance from the existing Brown’s Well site on Muddy Run to the town’s water treatment plant is almost exactly the same distance. Brown’s Well already exists in a sub-basin that is not nearly as heavily overallocated as Bull Brook sub-basin. While they are making the argument that the town plans to reduce its use of Brown’s Well water because of high manganese, construction of the main from Brown’s Well to the treatment plant would allow the use of that water, and would cost much less in total than the proposed project.

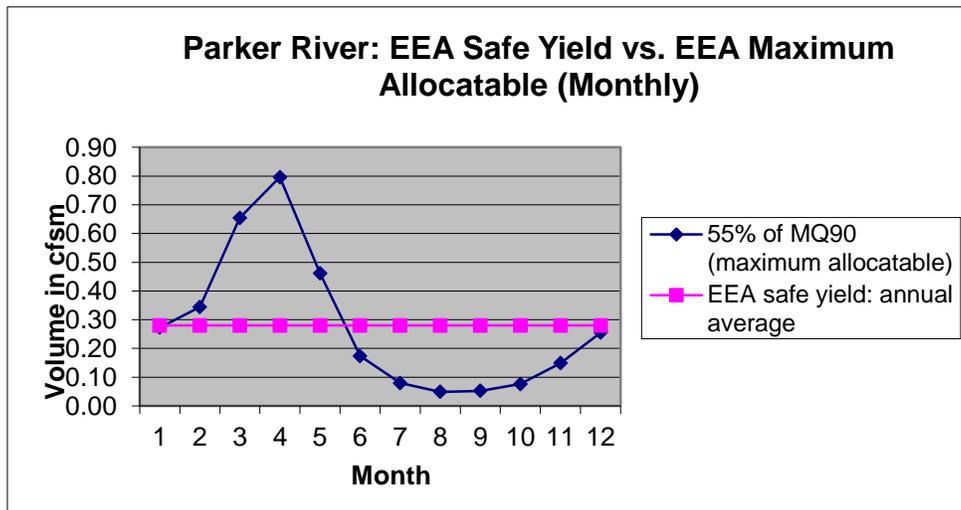
I also would like to point out that recommendations of the Parker River Watershed Action Plan (PRWAP) have largely gone unheeded and have not been done. For example,

- Establish minimum and seasonal flows below Dow & Bull Brook Reservoirs. (PRWAP p. 13)
- Perform an Instream Flow study for the Egypt and Rowley River including Dow and Bull Brooks, as well as for the Parker River and its major tributaries including Wheeler Brook and Penn Brook. (PRWAP p. 13)
- Ipswich Water Department has applied for a permit to withdraw greater volumes from their sources in the Rowley River subwatershed. [Note this refers to the permit application submitted almost 2 decades ago; the current ENF says the town will not seek more water.] Prior to the permit issuance the Water Department is required to implement aggressive water conservation. Through the permitting process, determine the potential impacts of Ipswich Water Department’s withdrawals on streamflow/habitat in the Egypt/Rowley River, as well as Bull Brook and Dow Brook Reservoirs. (PRWAP, p. 13)

- Minimum instream flows should be determined throughout the Parker River watershed and tied closely to water conservation ordinances, particularly during summer low flow periods. At present, low flow conditions periodically lead to reaches of the Parker River running dry during August and September. Lack of flow causes habitat fragmentation and destruction, poor water quality, and wildlife mortality. Low flow represents a very significant threat to aquatic life and habitat in freshwater sections of the watershed, and the effects of low flow on Plum Island Sound need to be better understood. Because of its effects on habitat, low flow must be considered a top priority within the watershed. (PRWAP, p. 25)
- Conduct instream biological monitoring on the Egypt River, Rowley River, Mill River, and Parker River to determine the effects of water withdrawals on habitat and aquatic life. (PRWAP, p. 29)
- Remove granite blocks in the Egypt/Rowley River upstream from Route 1A, as these act as an obstruction during low and medium flows. (PRWAP, p. 30)

As a long-time resident, I am aware that the Town of Ipswich faces serious issues and constraints in regard to its water supply. These are in part the result of decades of mismanagement of water withdrawals throughout the Ipswich and Parker River Watersheds. In particular, the Ipswich River is so overallocated that the lower section of the river, in Ipswich, which has a drainage area of more than 125 square miles, was completely desiccated during the drought of 2016. This is mostly due to the fact that too much water is withdrawn by upstream communities, most of which is transferred out of basin. The Ipswich River was recognized by American Rivers in 2003 as the third most endangered river in North America, due to the impacts of these water withdrawals and water mismanagement.

The Parker River also experiences extreme low-flow and no-flow problems, even though, according to MassDEP’s flawed safe yield methodology, 5.95 times more water can “safely” be withdrawn. (Mass DEP safe yield = 15 mgd; current authorized withdrawals = 2.52 mgd. <https://www.mass.gov/files/documents/2016/08/pw/sy-16.pdf> ) That is certainly not true – the result is already the serious degradation of these watershed’s ecological values. The methodology glosses over the fact that the most water is withdrawn in summer, when the least water is available. In fact, the SWMI science indicates that only 0.06 cubic feet per second per square mile are available for allocation in August – and even less in September – yet DEP allows an annual average of 0.28 cfs/m and does not prevent more than that much water being used in summertime. Here is a graph showing how MassDEP’s [un]safe yield exceeds the “maximum allocatable amount”(according to the SWMI studies) of water in the Parker River sub-basin for 8 out of 12 months.



I recognize that Ipswich, which must draw its water from these two stressed basins, is in a bind. (The town also owns a site with a limited potential source in another watershed, the North Coastal basin, although I am not recommending that; there are ecological and water quality issues, and I am not advocating damaging that resource, as the others have been.) The first line of defense has to be to implement even more effective water conservation measures. Ipswich has made some progress in this area, especially with its seasonal rate structure, but there are more actions that have not yet been implemented. These include (without limitation) addressing excessive unaccounted for water (15.8% in 2017 per ENF p. A2); implementing a water offset program, whereby new water uses must offset water saving measures in other areas of town; implementing an inclining block water rate structure in addition to the seasonal rates (that's a good measure); water use restrictions based on streamflow (rather than reservoir levels); additional incentives and subsidies for water conservation retrofits, and more. Note that if Ipswich had initiated water use restrictions in 2016 based in streamflow as was done by other communities that use the Ipswich River as a water source, the restrictions would have gone into effect two months earlier than what happened – and would have helped avert or at least delay the water emergency that occurred later that year. If there were a streamflow gauge in Bull Brook, this would be helpful in monitoring the situation AND in implementing more effective conservation measures.

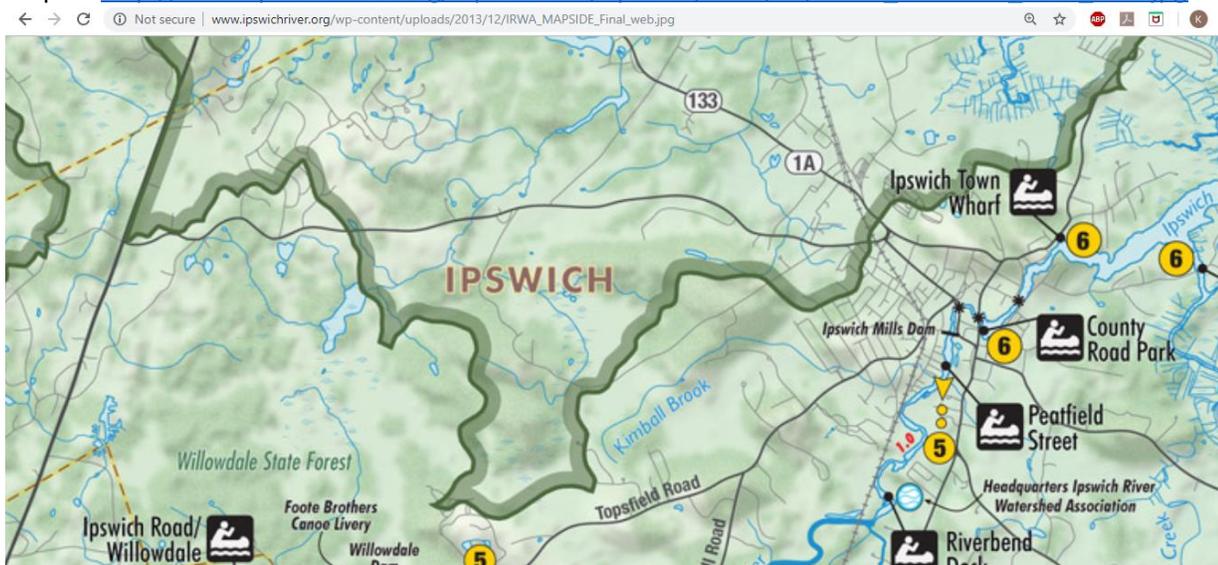
Around 2003, the Town briefly considered returning treated wastewater to recharge the Dow and Bull Brook sub-basins, but was dissuaded by a state official who erroneously reported that the discharge would be in the ACEC. This was not true, but the town did not pursue the option, which might be reopened for further consideration.

In addition, as a taxpayer in town, I believe it does not make sense to invest an additional \$3 million for a new source in a sub-basin that is already so over-allocated. This could make the water supply even more vulnerable to failure in the future. Since a water main has to be built anyway, it makes more sense to built it from Brown's Well to the water treatment plant – almost exactly the same distance as the one from the wellfield proposed in the ENF.

As you can see, there are many significant concerns about the proposed wellfield. Please require a full EIR for this project, addressing the concerns raised herein. Thank you for your consideration.

Some additional information.

Map 1: [http://www.ipswichriver.org/wp-content/uploads/2013/12/IRWA\\_MAPSIDE\\_Final\\_web.jpg](http://www.ipswichriver.org/wp-content/uploads/2013/12/IRWA_MAPSIDE_Final_web.jpg)



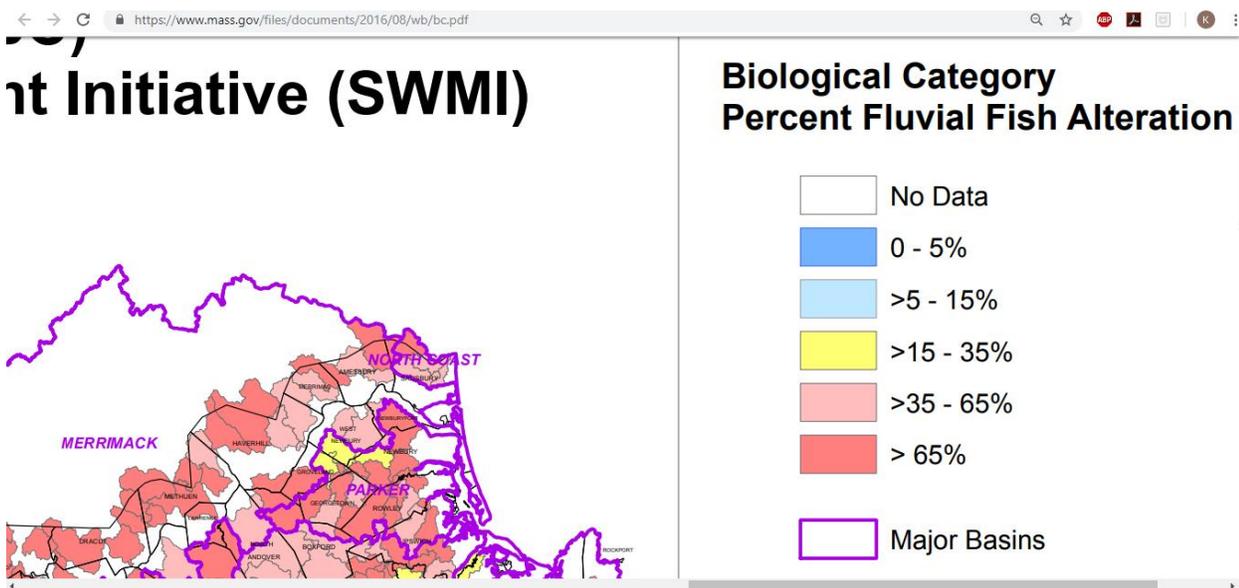
[https://newengland.water.usgs.gov/dev/s1/software/sye\\_mainpage.htm](https://newengland.water.usgs.gov/dev/s1/software/sye_mainpage.htm)

Sustainable Yield Estimator: “The Massachusetts Sustainable-Yield Estimator is a decision-support tool that provides screening-level estimates of the sustainable yield of a basin, **defined as the difference between the unregulated streamflow and a user-specified quantity of water that must remain in the stream to support such functions as recreational activities or aquatic habitat.**”

Page 2 of this report includes a brief discussion of “sustainable yield” and “safe yield.”

<https://pubs.usgs.gov/sir/2009/5227/pdf/sir2009-5227-508.pdf> One of the key takeaway points, in my opinion, is that this tool can calculate the amount of water that is safely available for withdrawals while protecting ecological values, at any location in the state. When USGS originally proposed this project, the project was named the “Safe Yield Estimator,” but DEP rejected that title. But the fact is that its use would address the Water Management Act’s statutory requirement to protect the environment from damage due to water withdrawals. Obviously they do not do that – which is why our rivers are pumped dry.

Map 2: Screenshot: SWMI map showing percentage of fluvial fish alteration



Attachments: Streamstats for two locations in Bull Brook Sub-basin; chart of Parker River flow statistics applicable to resource protection and MassDEP’s [un]safe yield.

Sincerely,

Kerry Mackin  
Ipswich, MA

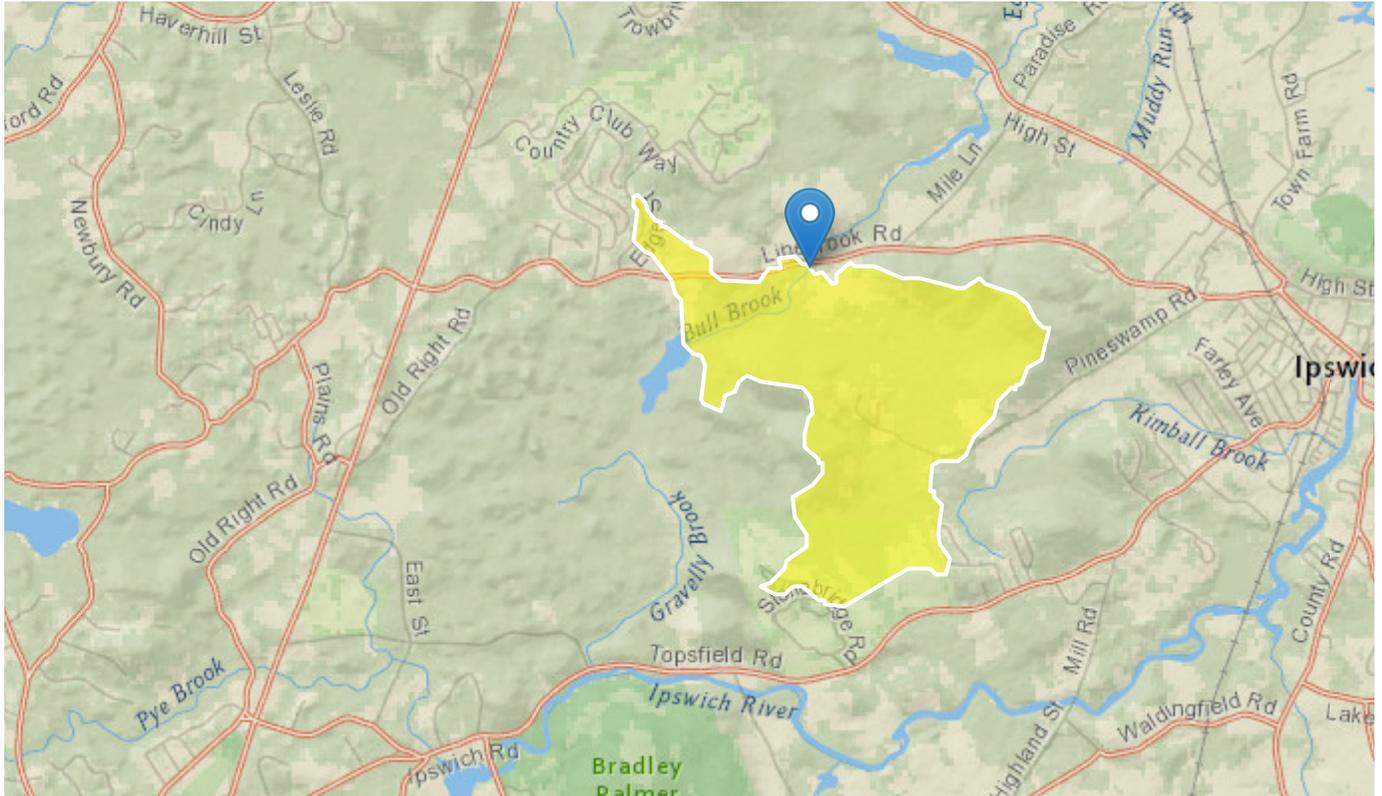
# StreamStats Report

Region ID: MA

Workspace ID: MA20190209134402199000

Clicked Point (Latitude, Longitude): 42.68565, -70.88490

Time: 2019-02-09 08:44:15 -0500



## Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.39	square miles
DRFTPERSTR	Area of stratified drift per unit of stream length	0.22	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
BSLDEM250	Mean basin slope computed from 1:250K DEM	3.399	percent

Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.39	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.22	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	3.399	percent	0.32	24.6

Flow-Duration Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
50 Percent Duration	1.34	ft <sup>3</sup> /s
60 Percent Duration	0.937	ft <sup>3</sup> /s
70 Percent Duration	0.575	ft <sup>3</sup> /s
75 Percent Duration	0.444	ft <sup>3</sup> /s
80 Percent Duration	0.412	ft <sup>3</sup> /s
85 Percent Duration	0.304	ft <sup>3</sup> /s
90 Percent Duration	0.248	ft <sup>3</sup> /s
95 Percent Duration	0.139	ft <sup>3</sup> /s
98 Percent Duration	0.0862	ft <sup>3</sup> /s
99 Percent Duration	0.0612	ft <sup>3</sup> /s

*Flow-Duration Statistics Citations*

**Ries, K.G., III, 2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)**

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Application Version: 4.3.0

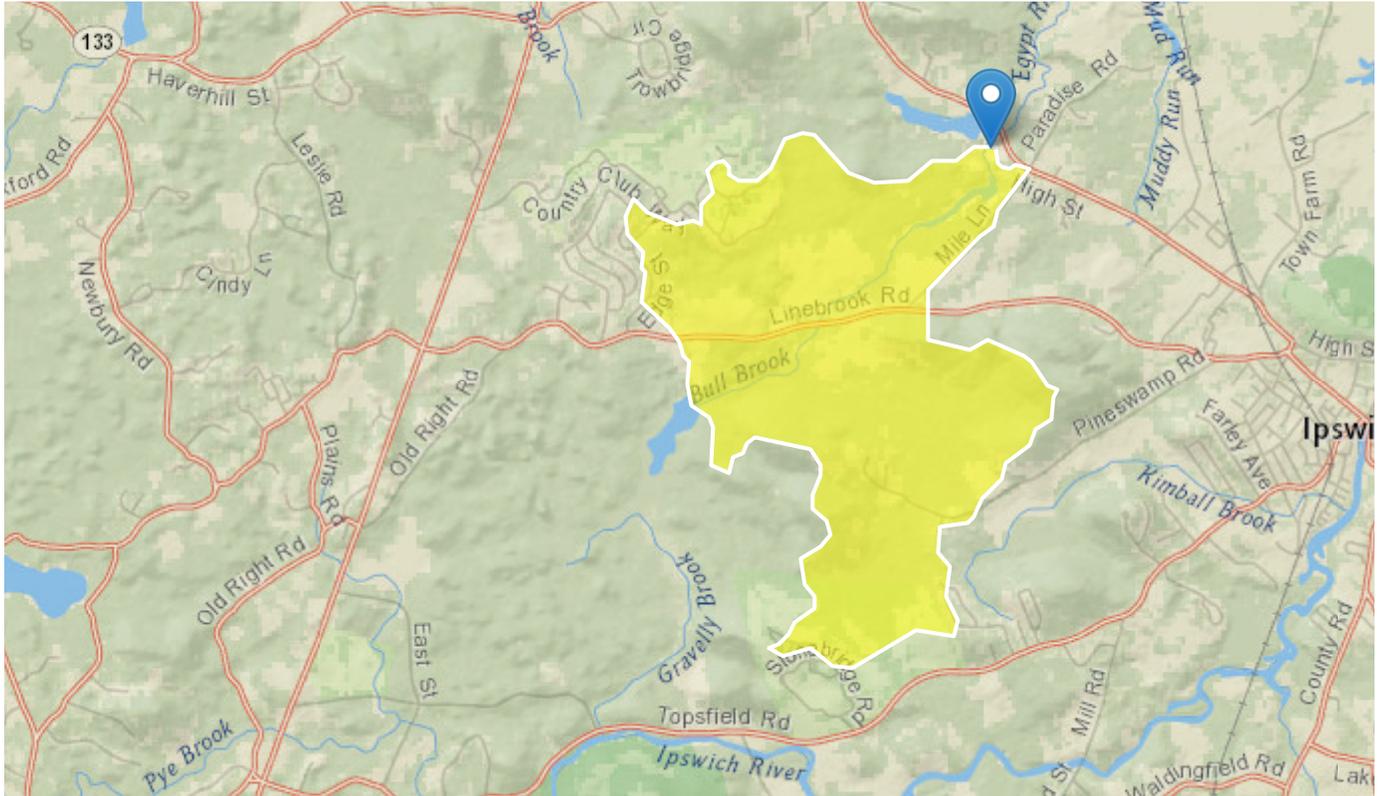
# StreamStats Report

Region ID: MA

Workspace ID: MA20190210013007769000

Clicked Point (Latitude, Longitude): 42.69725, -70.86997

Time: 2019-02-09 20:30:21 -0500



## Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.34	square miles
DRFTPERSTR	Area of stratified drift per unit of stream length	0.18	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.742	percent

## Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.34	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.18	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	2.742	percent	0.32	24.6

## Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SE	SEp
50 Percent Duration	2.27	ft <sup>3</sup> /s	0.92	5.58	17.6	17.6
60 Percent Duration	1.59	ft <sup>3</sup> /s	0.666	3.79	19.8	19.8
70 Percent Duration	0.957	ft <sup>3</sup> /s	0.415	2.18	23.5	23.5
75 Percent Duration	0.736	ft <sup>3</sup> /s	0.317	1.69	25.8	25.8
80 Percent Duration	0.627	ft <sup>3</sup> /s	0.264	1.47	28.4	28.4
85 Percent Duration	0.457	ft <sup>3</sup> /s	0.187	1.1	31.9	31.9
90 Percent Duration	0.351	ft <sup>3</sup> /s	0.139	0.866	36.6	36.6
95 Percent Duration	0.197	ft <sup>3</sup> /s	0.0679	0.553	45.6	45.6
98 Percent Duration	0.124	ft <sup>3</sup> /s	0.037	0.392	60.3	60.3
99 Percent Duration	0.0889	ft <sup>3</sup> /s	0.0249	0.299	65.1	65.1

*Flow-Duration Statistics Citations*

**Ries, K.G., III, 2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)**

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Application Version: 4.3.0

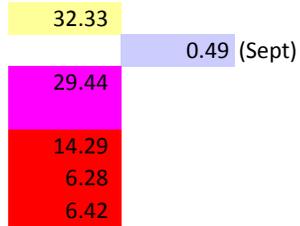
Ipswich <sup>1</sup>	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann Avg	155.31
MQ50	1.32	1.53	2.81	3.09	1.85	0.90	0.40	0.26	0.22	0.43	1.22	1.43	1.29	155.20 drainage ar
MQ90	0.52	0.65	1.22	1.48	0.87	0.33	0.16	0.10	0.11	0.16	0.29	0.49	0.53	
MQ95	0.33	0.52	0.97	1.27	0.75	0.26	0.13	0.09	0.09	0.12	0.22	0.37	0.43	
MQ98	0.27	0.43	0.85	1.01	0.63	0.21	0.10	0.06	0.05	0.10	0.16	0.25	0.34	
MQ99	0.24	0.35	0.65	0.91	0.58	0.17	0.05	0.06	0.04	0.05	0.16	0.21	0.29	
MQ99.9+ (f	0.21	0.22	0.43	0.60	0.44	0.11	0.04	0.05	0.04	0.04	0.15	0.17	0.21	
25% of MQ	0.33	0.38	0.70	0.77	0.46	0.23	0.10	0.06	0.05	0.11	0.30	0.36	0.32	
Ratio 25% f	63%	58%	57%	52%	53%	68%	61%	61%	49%	68%	106%	74%	64%	
55% of MQ	0.29	0.36	0.67	0.82	0.48	0.18	0.09	0.06	0.06	0.09	0.16	0.27	0.29	
EEA safe yir	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	
10%/10%/z	0.13			0.31				0.06		0.06			0.14	2.1 X
10%/10%/z	0.05			0.15				0.03		0.02			0.06	4.7 X
25% depletion of AugQ50													0.06	4.6 X
90%/90%/7	1.19			2.78				0.19		0.36			1.13	
90%/90%/7	0.47			1.33				0.08		0.13			0.50	
20% deplet	0.10	0.13	0.24	0.30	0.17	0.07	0.03	0.02	0.02	0.03	0.06	0.10	0.11	
Monthly de	89.2	82.3	89.5	95.3	111.5	123.1	122.2	115.5	104.6	93.7	85.4	87.7	100	
monthly %	26.15	24.13	26.24	27.94	32.69	36.09	35.83	33.86	30.67	27.47	25.04	25.71	29.32	
% flows lov	3%	<1%	0%	0%	0%	7%	36%	57%	65%	35%	10%	3%		
% flows lov	2%	<1%	0%	0%	0%	12%	45%	64%	67%	32%	7%	2%		

Parker	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann Avg	81.79
MQ50	1.29	1.49	2.80	3.09	1.82	0.87	0.38	0.24	0.20	0.41	1.18	1.40	1.26	should be 62.93 sq.mi.
MQ90	0.50	0.63	1.19	1.45	0.84	0.32	0.14	0.09	0.10	0.14	0.27	0.46	0.51	82.80 drainage ar
MQ95	0.32	0.49	0.94	1.24	0.72	0.24	0.11	0.08	0.08	0.10	0.20	0.35	0.41	
MQ98	0.25	0.41	0.82	0.98	0.60	0.20	0.08	0.05	0.04	0.08	0.14	0.24	0.32	
MQ99	0.23	0.32	0.62	0.88	0.55	0.15	0.04	0.04	0.03	0.04	0.14	0.19	0.27	
MQ99.9+ (f	0.19	0.21	0.41	0.57	0.42	0.09	0.03	0.03	0.03	0.03	0.13	0.15	0.19	
25% of MQ	0.32	0.37	0.70	0.77	0.46	0.22	0.09	0.06	0.05	0.10	0.30	0.35	0.32	
Ratio 25% f	65%	60%	59%	53%	54%	69%	65%	67%	53%	73%	110%	75%	67%	
55% of MQ	0.27	0.34	0.65	0.80	0.46	0.17	0.08	0.05	0.05	0.08	0.15	0.26	0.28	
EEA safe yir	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	
10%/10%/z	0.13			0.31				0.06		0.06			0.14	2.0 X
10%/10%/z	0.05			0.14				0.02		0.02			0.06	4.7 X
25% depletion of AugQ50													0.06	4.7 X
USGS Mont	89%	82%	90%	95%	112%	123%	122%	116%	105%	94%	85%	88%	100%	
monthly de	0.25	0.23	0.25	0.27	0.31	0.34	0.34	0.32	0.29	0.26	0.24	0.25	0.28	
% flows lov	3%	<1%	0%	0%	0%	8%	63%	59%	67%	37%	11%	3%		
% flows lov	2%	<1%	0%	0%	0%	12%	66%	64%	67%	33%	8%	2%		

**SY-mgd**

ea used by DEP in safe yield calculation

0.414      0.112      0.106 Q90      0.10



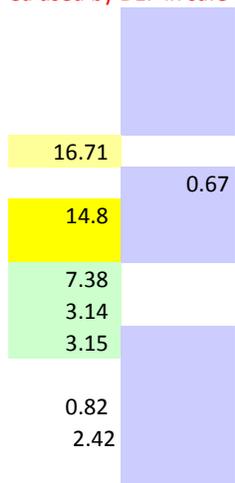
Recalculate using DEP drainage area  
29.4  
29.4 = DEP safe yield



**SY-mgd**

ea used by DEP in safe yield calculation

0.403      0.106      0.094 Q90      0.09



recalculate SY using DEP drainage area  
15.0  
15.0 = DEP safe yield

0.180995  
14.80362  
3.855204

at Byfield  
excluding salt marsh/estuary/barrier beach



## Patel, Purvi (EEA)

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**From:** Kerry Mackin <kerrylmackin@gmail.com>  
**Sent:** Tuesday, February 12, 2019 12:19 PM  
**To:** Buckley, Deirdre (EEA); Patel, Purvi (EEA)  
**Subject:** Re: Comments on ENF

Clarifying that the Streamstats analysis showed it would not go dry even in an extreme drought - but it went dry last year, which was not even a drought year. It's obvious that this sub-basin is already overallocated.

On Tue, Feb 12, 2019 at 12:15 PM Kerry Mackin <[kerrylmackin@gmail.com](mailto:kerrylmackin@gmail.com)> wrote:

A point that I want to clarify is that the fact that the pump test was done when the river was dry is significant in several ways. First, last year was not a drought year, so the fact that this perennial brook was dry is indicative of the excessive water withdrawals occurring there. Also, it really casts doubt on the validity of the pump test. While they installed some monitors, that does not fully address impacts along the length of the streambed.

Also, by way of introduction, I was the Conservation Agent in Topsfield for 6 years, the Executive Director of the Ipswich River Watershed Association for almost two decades, served on the SWMI Technical Advisory Committee (which DEP did not appropriately use in development of the safe yield methodology) and the Water Management Act Advisory Committee for almost two decades. I am pretty familiar with water issues in this region.

Thanks for your consideration.

Kerry Mackin

On Mon, Feb 11, 2019 at 12:31 PM Kerry Mackin <[kerrylmackin@gmail.com](mailto:kerrylmackin@gmail.com)> wrote:

Hello,

Attached are my comments on the Town of Ipswich ENF for a new wellfield on the Lynch property (EEA #15973). I am also attaching two Streamstats analyses of flow regimes at locations on Bull Brook, and an analysis of flow statistical data provided to me by MassDCR Office of Water Resources several years ago, in relation to the development of a safe yield methodology.

I would also like to know what level of review was conducted by MEPA, if any, of the MassDEP safe yield methodology that they adopted in 2014. I ask because it clearly does not comply with S. 61 of MEPA.

Thank you for your consideration and any information you can provide regarding MEPA review of the safe yield methodology.

Sincerely,

Kerry Mackin

Ipswich, MA