



THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

July 31, 2009

Ian Bowles, Secretary
Executive Office of Environmental Affairs
Attention: Anne Canaday
EEA# 14197
100 Cambridge Street
Boston, MA 02114

RECEIVED

JUL 31 2009

MEPA

Dear Secretary Bowles:

Staff for the Water Resources Commission (WRC) has reviewed the Draft Environmental Impact Report (DEIR) for the Framingham Birch Road Wellfield redevelopment. The proposal is to reactivate Framingham's defunct wellfield by replacing the existing wells with newer, more efficient wells. The well site is located in the Sudbury River subbasin of the Concord River basin. Framingham discharges its wastewater to the Massachusetts Coastal basin via the Massachusetts Water Resources Authority's (MWRA) wastewater system. The Town is maintaining that it has a "grandfathered" Interbasin Transfer Act (ITA) capacity of 6.16 million gallons per day (mgd). To support this case, the DEIR presents a legal analysis of the water resources in Framingham. This case is complex and required careful consideration. However, the WRC respectfully disagrees with the conclusion of this analysis. The interbasin transfer of up to 3.17 mgd is exempt from WRC review but we believe that any transfer above that is jurisdictional under the Act.

The Town and its consultants met with the Department of Environmental Protection (MassDEP) and WRC staff on May 12, 2009. At this meeting, the original capacity of the Birch Road Wells was discussed. Using historical reports and records, Framingham, MassDEP, and WRC staff agreed that the original capacity of the Birch Road Wells is 3.17 mgd. (See attached email from Kathleen Baskin, dated June 10, 2009.) This town-owned water supply represents an interbasin transfer of water from the Concord River basin to the Massachusetts Coastal basin, as described above. In accordance with 313 CMR 4.00, Section 4.02, replacement of existing wells to their original capacity is exempt from ITA review, as long as the original sources are then abandoned (or decommissioned) so that there is no "increase over the present rate of interbasin transfers of the surface or groundwater" (MGL Ch 21 Section 8C)¹. (See attached email between DEP and

¹ For example, in 2004, the WRC found that the Town did not comply with the existing operating rules necessary to bring Home Farm Well #2 in Shrewsbury from intermittent back-up redundant use to active full-time use. At Shrewsbury's official abandonment/decommissioning of other wells within the Shrewsbury water supply system in the same basin. See <http://www.mass.gov/dep/water/supply/bsn/bsn/docs/shrews/decides>

WRC staff, dated December 7, 2005.) As the owner of the wells, Framingham is able to formally abandon and decommission the original Birch Road Wells.

While the Birch Road wellfield interbasin transfer system transfers water out of the Concord River basin, the Winter Street Pumping Station is a connection, not a separate water supply source, to the Massachusetts Water Resources Authority's (MWRA) historic, and now emergency-only, Sudbury Aqueduct. This pumping station is connected to an interbasin transfer system that mostly brings water into the Concord River basin from other river basins in the Commonwealth although a small percentage of the water in the system originates in the Sudbury River (Concord River) watershed. We disagree that Framingham's Winter Street Pumping station is "grandfathered" under the ITA.

The Winter Street Pumping Station took water from the Sudbury Aqueduct located downgradient of the former Metropolitan District Commission's (MDC) Foss Reservoir (also known as Reservoir #3). The reservoirs in the MDC system, including Foss Reservoir, remain under the ownership and control of the Commonwealth of Massachusetts and are administered by the Department of Conservation and Recreation (DCR), the successor agency to the MDC. The Massachusetts Water Resources Authority (MWRA) has rights to use the water from the reservoir system and considers it, and the Sudbury Aqueduct, as part of its emergency water supply system. The Sudbury Aqueduct system, including any related pipelines, is owned by the MWRA. The pumping station is not a water supply source.

Framingham claims in Appendix B of the DEIR that Chapter 206 of the Acts of 1881, along with Chapter 167 of the Acts of 1846 and Chapter 177 of the Acts of 1872, gives it an additional 2.99 mgd of "grandfathered" interbasin transfer rights from the pumping station. However, the Acts of 1872 simply state, "Nothing in this act shall be so construed as ...to prevent the inhabitants of ... Framingham ... from taking from the Sudbury and Assabet Rivers ... so much of the water ... as shall be necessary for extinguishing fires, and for all ordinary domestic and household purposes ..." Additionally, the Acts of 1881 merely state that Framingham can "take and hold" those waters in order to develop its own water supply. Although it appears that the legislation may have granted Framingham the right to develop its own water supply from waters of the Sudbury River watershed, it was the MDC that developed the Sudbury/Framingham reservoir system. The town of Framingham was a customer of the MDC's water supply but did not own, control, or exercise authority over this system.

The Foss Reservoir, physically located within the Sudbury River watershed, was used as a distribution reservoir, receiving water largely originating from the Wachusett Reservoir in the Nashua River basin and the Quabbin Reservoir and Ware River in the Chicopee River basin. Only a small portion of the water pumped from that source originated in the Concord River basin (Sudbury watershed) and none of this came directly from the Sudbury or Assabet Rivers. Even though a portion of this water originates in the Sudbury River watershed, this water was obtained through *purchase* from the MDC. Although Framingham might decommission the Winter Street pumping station (which pumped water from the Sudbury Aqueduct²), it cannot decommission or

² The Sudbury Aqueduct is a man-made covered channel that historically transmitted water from the Foss Reservoir in the Chestnut Hill Reservoir in Boston. It was used by the Metropolitan Water District from 1878 to 1974 to transmit raw water to customer communities. Since 1974 it has served as an emergency supply system for the MWRA's water. Foss Reservoir is a small distribution reservoir that receives water from the larger Sudbury

abandon the water supply source or transmission aqueduct pumped by that station. That water supply source and aqueduct will remain on emergency stand-by status to serve MWRA water supply customers. (See: <http://www.mwra.com/04water/html/sudres.htm>). When MDC discontinued periodic usage of the Sudbury Aqueduct in 1974, Framingham lost the ability to obtain water through the Winter Street Pump Station. Framingham's water supply agreements with MWRA have since only referred to taking water from their connections to the Hultman Aqueduct and recently the MetroWest Water Supply Tunnel.

The ITA regulations (313 CMR 4.02) define the "Present Rate of Interbasin Transfer in a Water Supply System" as "the hydraulic capacity of an interbasin transfer system which was authorized, *constructed and useable for water supply purposes* without additional installation of facilities or *changes in any authority or operating rule prior to the effective date of the act....*" (emphasis added). Framingham never developed its own sources from either the Sudbury or Assabet Rivers. Therefore it does not have any additional sources that pump water originating within the Concord River basin which were "constructed and useable for water supply purposes ... prior to the effective date of the act".

The Winter Street Pumping Station was not useable for water supply without a change in authority or operating rule. The Town does not have the authority to abandon or decommission the water supply source to which the Winter Street Pumping Station was connected. The ability to transfer 100% of the water through the Sudbury Aqueduct remains with the DCR/MWRA system. Because of this, there will be no decrease in the ability to transfer water from the Concord River basin by simply decommissioning the Winter Street pumping station.

Framingham does not have additional sources within the Concord River basin that it could abandon or decommission to provide the offset for the 1.13 mgd over the exempt interbasin transfer capacity of the original Birch Road Wellfield. **Therefore the Town's preferred alternative to redevelop the Birch Road Wellfield to a capacity of 4.3 mgd represents an increase over the present rate of interbasin transfer of 1.13 mgd and will require a full review under the ITA.**

As you know, the WRC uses the MEPA process as its ITA application process. Attached to this letter is the scope for the information required to be included in an application. Framingham should use the FEIR to address this information, if it chooses to develop the Birch Road wellfield over the grandfathered capacity of 3.17 mgd. Once all of the information needed to review the project under the ITA has been provided, and the MEPA process has been completed, the WRC will have sixty (60) days to hold two public hearings on the application, after which a staff recommendation to approve or deny the request will be presented at the next possible regularly scheduled WRC meeting. The WRC generally holds an additional public hearing on the staff recommendation within two (2) weeks of its presentation. After the close of the final public hearing, a decision to approve or deny the application must be made within 60 days.

The DEIR suggests that outstanding issues can be addressed through MassDEP's Water Management Act (WMA) permitting process. However, we feel that the multi-disciplinary and

Reservoir. Historically 80-90 % of the water transferred through the Sudbury Aqueduct originated in the Nashua River Basin (Wachusett Reservoir and Concord River Basin) while the Quabbin Reservoir was used to supplement the Sudbury River Basin's supply.

public processes under MEPA and the ITA are the proper places to address these issues and to develop a more detailed, well management plan to mitigate impacts on water resources. Conditions of approval developed by the ITA process are generally incorporated into a WMA permit. Although MassDEP generally does not issue its WMA permit until the ITA process has been complete, WRC staff and DEP can work together to address concerns related to the length of time involved in environmental review.

We have the following additional comments on the DEIR. These should be addressed in the FEIR:

The DEIR contains several inaccuracies about the use of "in-basin sources" as Framingham's sole source of water. As stated in the WRC's letter of May 4, 2009 (attached), Framingham has purchased water from the DCR(MDC)/MWRA system for over 100 years. Most of this purchased water originated from out-of-basin sources.

The proponent states throughout the DEIR that pumping from the proposed Birch Road Well Field will have no impact on the Sudbury River watershed. It is a basic tenet of hydrology that the proposed pumping will reduce the flow in the river by an amount almost equivalent to the amount of water to be pumped from the wells. The pumping will divert water from the Sudbury River by capturing ground water that would have become stream flow and by inducing water to flow into the aquifer from Lake Cochituate and possibly from the Sudbury River. This will affect the surface water features in the area by decreasing the level of the lake, decreasing outflow from the lake, and reducing flows in the main stem of the Sudbury River adjacent to the well field. These decreases in lake level and streamflow will be most noticeable, and have the greatest impact, during periods of low rainfall, high evapotranspiration, and low natural streamflow, which typically occur from July through October. The upper Sudbury River is already in a depleted state as a result of upstream withdrawals that are not returned to the basin. Much of the Concord River basin was designated as a Medium Stress basin by the Water Resources Commission in 2001. Recent research by the US Geological Survey (USGS) in cooperation with DCR, indicates that the upper Sudbury River is highly depleted during summer months. A final report, "Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins" expected to be published by USGS by the end of 2009 will show the upper reaches of the Sudbury River to exhibit streamflow depletion during the summer months under existing conditions. These conditions would be exacerbated by additional ground water withdrawals by the Birch Road wells. A surface water flow model for the upper Sudbury River is being completed by USGS (publication expected during 2009) which will further our understanding of hydrologic conditions in this area.

Section 1.1 Project Description

Page 1-2 references the DEP New Source Approval process and pumping test report. The New Source Approval report and the well yield have not yet been approved by DEP. Complete documentation for the ground water model has not yet been provided by Framingham and should be. We also question if the ground water model is still valid, since Framingham appears to have altered its conception of ground water recharge rates at the site. An explanation of any changes made to the ground water model to reflect Framingham's alteration of ground water recharge rates should be provided.

Section 2.2.4 Existing Environmental Conditions

Page 2-14 contains a description of a bedrock outcrop to the north of the wells and between the wells and the Sudbury River. A figure illustrating the bedrock outcrop should be submitted with the FEIR.

Section 6. Water Budget

In order to evaluate the effect of pumping the Birch Road Wells, the proponent has developed a Water Budget model for the Lake Cochituate watershed. Most of the assumptions used in the model are reasonable, with the notable exception of the influence of the proposed wells. The influence of the new wells was assumed to be equivalent to that from another well field located adjacent to the lake. The geohydrology of the new well site is complex, characterized by rapidly changing hydraulic conductivity and saturated thickness, confining conditions, and wetlands that interact with the ground water system. These conditions were not taken into consideration in the evaluation of Birch Road Wells influence on the lake. Rather, the analysis assumed that the Birch Road Wells would induce recharge from Lake Cochituate proportionally to the Natick wells, based on a site-specific study of the Natick wells. A ground water flow model that incorporates all elements of the conceptual geohydrology in the area of the well field should be used for this analysis. Any model developed or used for this purpose should be well-documented so that its utility for this purpose can be evaluated. The model should be provided to the Massachusetts Department of Environmental Protection (MassDEP) and WRC staff at DCR's Office of Water Resources.

In comments relative to the Expanded Environmental Notification Form (EENF) for the Birch Road Wells, DCR requested that the Town use a ground water model to determine the effect on Lake Cochituate of pumping the Birch Road Wells. During the Birch Road pumping test in May 2006, Framingham pumped the wells through a pipeline that discharged to Lake Cochituate, essentially recirculating the water back "upstream" from the Birch Road wells. During proposed well use, all the water pumped from the Birch Road wells will leave the Sudbury River basin and be discharged to the MWRA wastewater system. Impacts to water resources with the Birch Road wells pumping without recharge to Lake Cochituate should be evaluated with a ground water model, since the pumping test observations were affected by the recirculation. In addition, the pumping test was conducted in the spring, not in the driest of summer conditions. A revised ground water model should be developed and utilized to assess impacts on Lake Cochituate and the Sudbury River. In the EENF, Framingham utilized a ground water model to delineate wellhead protection Zone II around the Birch Road well field. This model should be revised and used to analyze potential impacts to surface water resources. The model should also be used to evaluate the time delay of pumping alterations on water resource impacts. Complete documentation for the ground water model should be provided to WRC staff. WRC staff notes that the Proponent appears to have altered its conception of ground water recharge rates at the site. The FEIR should include an explanation of any changes made to the ground water model to reflect the Proponent's alteration of ground water recharge rates.

Page 6-1 lists processes through which water is lost from Lake Cochituate. It should note that water is also lost from the lake at several locations by natural ground water discharge away from the lake, most notably at the north end of North Pond. (See USGS Water Investigations Report 84-4315 and USGS Hydrologic-Data Report No. 23)

Section 6.1 Recharge Analysis: the FEIR should clarify the size of the Zone II.

Section 6.4, page 6-6 states that DCR manages Lake Cochituate levels for recreation. WRC staff notes that the dam on the lake is also managed to maintain streamflow in Cochituate Brook. This was not taken into account in the Water Budget model and should have been.

Section 6.4, page 6-8 describes water budget model validation. The analysis really describes the goodness of fit of the model results but does not validate water budget. Assumptions used in the water budget give reasonable results. Other alternative assumptions may also give reasonable results.

Section 7. Ground Water and Surface Water Impacts

While the numerical hydrologic models that were relied on to estimate the impacts of long-term meteorological conditions and ground water withdrawals on streamflow and lake levels presented fairly reasonable results, those results are incomplete. Like the water budget analysis described in Section 6, the methodology used in the models to calculate the impact of pumping from the Birch Road Wells on lake levels and streamflow is not adequate to realistically describe that impact. There is no consideration of the complex hydrologic conditions, documented in the USGS reports and cited in the DEIR, that are known to be present at the north end of Lake Cochituate. These complex hydrologic conditions, coupled with the distance of the proposed well field from both the lake and the Sudbury River will result in significant time delays between changing of pumping rates and resulting effects on distant environmental receptors such as Lake Cochituate, the Sudbury River, and wetlands. In order to avoid inaccuracies and present the most robust data so the WRC can effectively assess the impacts of the Project, we request that the FEIR present findings using a ground water model.

Section 7.1.2 Model Outflows lists the outflows used in Framingham's model. It does not seem that Framingham considered the ground water outflow from the north end of Lake Cochituate in this model. In addition, the model could be better refined using monthly NOAA data for pan evaporation. The evaporation rate should go to zero when there is ice cover on the lake.

Section 7.1.2.2 implies that 64% of the water pumped from the Natick wells is intercepted ground water that would have discharged to the lake and 36% is induced infiltration from the lake. Ultimately, all of this water is removed from the Lake Cochituate hydrologic system. In Section 7.4, paragraph 2, it is estimated that 30% of the water supplied to the Birch Road wells would be derived from Lake Cochituate recharge. This is a simplistic estimation based on studies at the Natick wells, where the hydrology may be quite different. In the FEIR, the Town should use a more robust, site-specific procedure to determine the amount of water that will be induced to flow from the lake to the Birch Road wells.

Section 7.4.1 Model Validation: As stated earlier, the term "Model Validation" is a misnomer. The model uses data from 1977-1979 to calibrate the Hydrologic Brook Model. There have been major changes in the overall watershed of the lake, stream and the immediate surrounding lands (development abutting the lake) which could affect the model assumptions and results. Evaporation may be underestimated, given a surface area over 650 acres for all three lakes and an orientation that is almost exactly in-line with prevailing wind currents. Lake Cochituate has a large fetch area.

Section 7.6 Cochituate Brook Impacts: On pages 7-27 through 7-30, Framingham concludes that there will be increases of up to four days per year in no-flow conditions over the Lake Cochituate dam to Cochituate Brook. Further, decreases in the medians of August and September mean flows at this location are modeled to be on the order of 15 to 20 percent. These impacts are significant and should be monitored and mitigated. Pumping reductions would probably be slow to mitigate these late-summer season impacts, as there will likely be a long delay between pumping reductions and improvements in the lake level and flow over the dam. Framingham has not assessed the delayed response of pumping on the lake level. This must be done in the FEIR because it will be difficult to evaluate appropriate mitigation measures without such an assessment.

Units should be provided for parameters displayed in Tables 7-5, 7-6, and 7-9. Table 7-8 is inaccurate. Framingham did not adequately characterize Lake Cochituate levels and the management of the dam. This should be corrected in the FEIR.

Exposing land under water in South Pond is prohibited as a result of sediment contamination associated with the U.S. Army Soldier Systems Center in Natick. The FEIR should include an evaluation of the potential impact of Lake Cochituate level reduction with respect to this hazardous waste site regulated by the US Environmental Protection Agency and MassDEP. The DEIR did not address the potential impacts of pumping the Birch Road wells on the well yields the Wayland and Natick Well fields or remedial actions at the Army site, as the lowering of lake levels may affect recharge rates to the public water supply wells and may possibly alter ground water flow paths in the area.

Because of the important recreational resources at Lake Cochituate, a thorough evaluation of the impacts of drawdown on these resources must be presented in the FEIR. We refer the proponent to DCR's comments on these resources.

The methodology used to collect streamflow field measurements, 2008 to present, described in Section 7.6.1 (page 7-30) does not meet standards for this type of data. In particular, averaging velocity data within cross-sections is not adequate. If the applicant intends to use this type of data for regulatory monitoring purposes, the data should be collected in accordance with ASTM standard methods. In addition, a location map for the measurement points should be provided.

Section 7.7 Sudbury River Impacts: The analysis shows that interception of 4.3 mgd of ground water by well withdrawals would constitute up to 12 percent of median monthly mean flows at the Sudbury River Oxbow near the Birch Road site. Impacts to some daily flows would be more significant. For example, during the summer and fall of 2007, the Sudbury River at Saxonville fell below the proposed Birch Road wells water withdrawal rate during three weeks between August and October. The wells would have had the capacity to completely dry up the river during these periods. The Sudbury River flows would have been reduced by at least 50% for most of the period between August 19, 2007 and October 18, 2007 if the Birch Road withdrawals were depleting streamflow. Impacts to the monthly flow statistic are significant during the dry summer months of July through October. These impacts should be monitored and mitigated. Again, the time delay of pumping alterations on streamflow must be assessed in order to design an appropriate mitigation plan.

Section 7.9 Wayland Wells: Framingham describes deposits of silt and clay that act as an aquifer boundary to the east of the site. Examination of geologic logs of wells near the north end of Lake Cochituate and near Dudley Pond indicate that there is a great deal of coarse grained, high conductivity, aquifer material present at these locations. As a result, it is probable that high-volume, long-term pumping at the Birch Road site may affect both Lake Cochituate and Dudley Pond. There is no evidence that these deposits would cause there to be a negative boundary at this location. Ground water monitoring near Lake Cochituate and Dudley Pond to document the effects of long-term pumping at the Birch Road wells will likely be required if these wells are approved.

Section 10 Mitigation

Section 10.7.5 Surface Water Level Monitoring proposes a USGS data logging gage at the spillway and development of a stage-discharge curve and a letter report of recommendations to increase instream flows in Cochituate Brook after a full year of baseline monitoring. We agree this baseline monitoring would be useful to a future mitigation plan. In addition, monitoring ground water levels at one of the pumping test observation wells coincident with the streamflow monitoring would probably also be useful to a later management plan. Operational monitoring at these locations would also probably be useful.

The proponent is strongly encouraged to meet with the WRC staff for assistance with the information required for ITA review. To facilitate a timely review, the Town should contact WRC staff at 617-626-1366 to set up a meeting to discuss ITA issues as early as possible before the preparation of the FEIR. Thank you for the opportunity to comment.

Sincerely,



Kathleen M. Baskin, P.E.
Executive Director

cc: Water Resources Commission
Michele Drury, DCR
Laura Dietz, DCR
Erin Graham, DCR
Bruce Hansen, DCR
Frank Hartig, DCR
Linda Hutchins, DCR
Nathaniel Tipton, DCR

Jonathan Yeo, DCR
Pamela Heidell, MWRA
Duane Levangie, DEP Boston
James Persky, DEP NERO
Eric Worrell, DEP NERO
Margaret Callanan, EEA
David Cash, EEA
Ken Kimmel, EEA

From: Baskin, Kathleen (EEA)

Sent: Wednesday, June 10, 2009 1:32 PM

To: Robert Golledge; peter.newton@seacon.com; evj@framinghamma.gov; paul.brinkman@seacon.com; Callanan, Margaret (EEA); LeVangie, Duane (DEP); Drury, Michele (DCR); Hutchins, Linda (DCR); Yeo, Jonathan (DCR); Monnelly, Anne (DCR); Persky, James (DEP); Hartig, Frank (DCR)

Cc: Canaday, Anne (EEA); Worrall, Eric (DEP)

Subject: Historical Capacity at Framingham's Birch Road wells

Attachments: Framingham Historic Pump Capacity Info.pdf

Page 1 of 1

7/28/2009

Thank you for attending the meeting on May 12, 2009 at EEA to discuss the historical capacity of the water supply wells at Birch Road in Framingham. DEP's Drinking Water Program has determined that the historical capacity of the wells is 3.17 MGD (rounded up from 3.168 MGD), based on 600 gpm for Wells #1 and #3 and 1,000 gpm for Well #2. (This gives a total of 2,200 gpm, which multiplied by 1,440 minutes per day equals 3.168 MGD.) DEP arrived at this figure using the following references, the first two of which are in the attached PDF.

- 1) 1981 Water Supply Notes provided by the Town
- 2) The 1992 SEA pumping test report on the Birch Road Wells
- 3) The mid-80s Water Management Act registration application form

WRC staff agrees with DEP that the documentation supports a conclusion that the historical capacity is 3.17 MGD. Historical capacity is relevant under the Interbasin Transfer Act.

Sincerely,

Kathy Baskin

Kathleen Baskin, P.E.

Director of Water Policy

Executive Office of Energy and Environmental Affairs

100 Cambridge Street, 9th floor

Boston, MA 02114

phone: 617-626-1012

fax: 617-626-1181

email: kathleen.baskin@state.ma.us

From: Drury, Michele (DCR)
Sent: Wednesday, December 07, 2005 10:39 AM
To: Persky, James (DEP)
Subject: FW: Framingham Wells

I've had some time to follow-up on this and I've saved my original emails on this. As stated below, the original Birch Street wells will need to be formally abandoned in order for the ITA not to take jurisdiction, but I think the process for development of the new wells and the process for formal abandonment can occur simultaneously (or close thereto). Keep me posted - just in case the WRC has further questions. Thanks.

-----Original Message-----

From: Drury, Michele (DCR)
Sent: Tuesday, September 20, 2005 3:14 PM
To: 'Yeo, Jonathan (DCR)'; Gildesgame, Mike (DCR); Hutchins, Linda (DCR)
Cc: Hartig, Frank (DCR); Baskin, Kathleen (ENV)
Subject: FW: Framingham Wells

I followed up on this with Jim Persky, DEP NERO. Framingham has not yet requested a site exam for the new wells and they are not replacement wells according to DEP's definition, but they will not exceed the original capacity of the Birch Road wells. As a condition of any permit issued by DEP, the original Birch Road wells will need to be abandoned (they have not yet gone through the formal abandonment process). So for our purposes, with the abandonment of the original Birch Road wells and construction of new wells that do not exceed the capacity of the original wells, there is no increase in the ability to transfer and the ITA is not triggered.

-----Original Message-----

From: Drury, Michele (DCR)
Sent: Thursday, September 15, 2005 2:31 PM
To: 'Yeo, Jonathan (DCR)'; 'Gildesgame, Mike (DCR)'; Hutchins, Linda (DCR)
Cc: Hartig, Frank (DCR); Baskin, Kathleen (ENV)
Subject: Framingham Wells

I spoke with Peter Newton at SEA concerning the reactivation of the Birch Road wells in Framingham. This is the situation:

These wells were in use up until the early '80's when use was discontinued due the water quality. The wells were never formally abandoned under the DEP process.

The town is now investigating redeveloping the wells, through the use of replacement wells. The older wells are old and obsolete. The new wells will be more efficient, but the capacity will not exceed that of the original wells. The original wells will be sealed, therefore it will be impossible to use them in tandem with the new wells.

Because of these circumstances, the ITA is NOT triggered by this project. Framingham never relinquished this "ability" to transfer water.

The regulations state that

"(i) renovating existing wells..." is exempt from the Act (313 CMR 4.02). We also have clear precedent for not taking jurisdiction over replacement/reactivation of wells that were not formally abandoned. Because of this precedent, I don't think we need to pursue this further, unless I hear from you that we'd like more information.



THE COMMONWEALTH OF MASSACHUSETTS WATER RESOURCES COMMISSION

EIR Scope for Communities Seeking

APPROVAL FOR A WASTEWATER TRANSFER TRIGGERED BY DEVELOPMENT OF A WATER SUPPLY

Under the Interbasin Transfer Act

This scope replaces the WRC application form (1986/1992) "*Application for Approval of an Action to Increase Over the Present Rate of Interbasin Transfer*" and is required for transfers considered "significant" under the Act. The information requested here should be incorporated into the EIR required by the MEPA regulations, 301 CMR 11.03. Wherever possible, the applicant should provide this information in an electronic format.

This scope is only for that portion of the EIR that pertains to the INTERBASIN TRANSFER ACT. There may be other issues which need to be addressed in the EIR for a particular project. The MEPA program should be contacted to determine a comprehensive scope.

The Interbasin Transfer Act governs the transfer of water and wastewater between river basins within the Commonwealth. Any water transferred out of a river basin, either for water supply or wastewater treatment purposes, is no longer available to replenish the "donor" basin's rivers, aquifers, lakes or wetlands. The purpose of the Act is to assure that if an interbasin transfer does occur, the resources of the donor basin are not adversely impacted.

The Interbasin Transfer Act can be triggered by development of a water supply, to be used in the "donor" basin, but transported out of basin for treatment and disposal as wastewater. The following scope outlines issues to be addressed in the EIR for these types of transfers. Consultation with DCR's Office of Water Resources (617-626-1366) is strongly recommended to tailor this scope to a specific proposal.

SUMMARY OF PROJECT

- Project Name
- Location
- Proponent's Name, Address, Phone Number
- Primary Contact's Name, Address, Phone Number, Fax Number, Email Address

DESCRIPTION OF THE PROPOSED INTERBASIN TRANSFER

- Describe and explain the reasons for the proposed interbasin transfer.

- Provide the approximate timetable for construction of the proposed transfer, including the estimated commencement date and the estimated completion date.
- Describe the existing transfer system including existing water supply sources, storage capacity, withdrawal constraints or other limiting factors and the wastewater conveyance system.
- Describe, in detail, the proposed interbasin transfer, including the maximum capacity, in millions of gallons per day (mgd) of the transfer facilities and the expected average daily transfer. Provide supporting information showing how the capacity was determined. Describe any proposed changes in existing structures and/or changes in operating rules of the water supplier or changes in transfer constraints.
- Describe the operating schedule of the proposed interbasin transfer, including the time periods, amounts to be transferred and the duration of the transfer.
- Provide the name, exact location and river basin of the source(s) of the proposed transfer of water, including the subbasin(s).
- List the communities, sections of communities, water districts or other areas that will use the water proposed to be transferred.
- Provide a precise description of the location, including river basin location, of the wastewater discharge point.
- List the known users of this and associated resources, including agricultural operations and nurseries, whose use could be affected by the proposed transfer.
- Include a map of appropriate scale that clearly and accurately illustrates the information requested in this section. Wherever possible, MASSGIS data layers should be used.

OTHER PERMITS REQUIRED

- List the local, State or Federal agencies/commissions from which permits have been obtained or will be sought

INFORMATION NEEDED TO EVALUATE THIS PROJECT AGAINST THE EIGHT CRITERIA OF THE INTERBASIN TRANSFER REGULATIONS, 313 CMR 4.05

Below, in **bold** the criteria for approval of an interbasin transfer are listed, as they appear in the regulations (313 CMR 4.05). Where appropriate, interpretations of some of the terminology in the regulations approved by the WRC to apply to wastewater transfers, in order to evaluate specific criteria within the “spirit” of the Act, appear in *italics*. Unless otherwise noted, the applicant must respond to all points listed under each criterion.

1. That an environmental review pursuant to M.G.L. c. 30, §§61 and 62H, inclusive, has been complied with for the proposed increase.

- Information needed for Interbasin Transfer review should be provided within the context of the EIR.
- Provide a copy of the ENF, including copies of comments received.
- When issued, provide a copy of the Secretary of Environmental Affairs certificate stating that the EIR properly complies with MEPA and its regulations.

2. That all reasonable efforts have been made to identify and develop all viable water supply sources in the receiving area of the proposed water supply interbasin transfer

Because this transfer is considered a wastewater transfer, a viable local source is defined as a

cost-effective, technologically feasible, environmentally sound **wastewater treatment system** which treats and discharges wastewater within the basin of origin, and has been approved for general use by DEP. Such systems can include, but are not limited to, conventional Title 5 systems, groundwater discharge systems, NPDES-regulated surface water discharge systems, alternative/innovative on-site systems or package treatment plants. **Receiving area is the community(ies) or portion of community(ies) whose wastewater is collected for discharge out of basin via an interbasin transfer.**

Describe in detail the efforts made to identify and develop all viable sources in the receiving area. Discuss water supply alternatives considered, but rejected. State reasons for rejection. The discussion should include:

- Discussion of the DEP-approved facilities plan³. A copy should be submitted to WRC Staff. This plan should evaluate potential in-basin sources of disposal, including Title 5, groundwater and surface water discharges, as described in DEP's Comprehensive Wastewater Management Planning⁴ Guidance. Submit copies of any other relevant studies and reports which evaluated in-basin wastewater disposal. The proponent should also discuss the feasibility of implementing DEP's wastewater reuse policy.
- Describe the costs of developing in-basin wastewater disposal facilities in the receiving area.
- If cost is a reason given for rejection of an inbasin source, compare these costs with the production costs recently incurred elsewhere in the Commonwealth for similar wastewater disposal facilities. Refer to the Performance Standards, available from DCR's website: <http://www.mass.gov/dcr/waterSupply/intbasin/download.htm>.
- Describe the impact on in-basin streamflow that would result from the development of any viable in-basin wastewater disposal facilities in the receiving area, as defined above for this criterion. Refer to 313 CMR 4.05 (5)(a) through (j).
- Discuss the feasibility of joining a regional or neighboring in-basin wastewater disposal facility in cities, towns or districts within the same basin as the receiving area. Are interconnections in place? If not, are such interconnections feasible?
- Discuss the wastewater disposal options considered but rejected. State the reasons for rejection.
- Provide documentation of the program to eliminate sources of inflow and infiltration (I/I). This program must meet the standards described under the Performance Standards for wastewater, available from DCR's website: <http://www.mass.gov/dcr/waterSupply/intbasin/download.htm>. Discuss the potential for eliminating enough I/I to mitigate the interbasin transfer.

3. That all practical measures to conserve water have been taken in the receiving area

This transfer involves both water supply and wastewater. Because both water conservation and Infiltration/Inflow (I/I) removal minimize the transfer out of basin, the applicant must address both of these issues.

- Provide an updated Water Conservation Questionnaire (available from DEP's Division of Watershed Permitting or at DEP's website: <http://www.state.ma.us/dep/brp/wtrm/files/con-wrc.doc>, or DCR's Office of Water Resources or at DCR's website:

³ Facilities Plans are also known as Comprehensive Water Management Plans, Comprehensive Water Resources Management Plans, and Integrated Water Resources Management Plans.

⁴ See 313 CMR #1

<http://www.mass.gov/dcr/waterSupply/intbasin/docs/consplan.doc>). If a Conservation Plan or Questionnaire is on file with DEP, provide a copy, updated to the present. Refer to Water Conservation Standards for the Commonwealth of Massachusetts (WRC, 2006), available from DCR's website: <http://www.mass.gov/dcr/waterSupply/intbasin/docs/constds.doc>, and the Interbasin Transfer Performance Standards (1999).

- Describe the current leak detection and system repair program. Discuss the methodology used. (refer to the Interbasin Transfer Act Performance Standards, available from DCR's website: <http://www.mass.gov/dcr/waterSupply/intbasin/docs>). What was the date of the most recent leak detection survey? What is the date of the next scheduled leak detection survey?
- Describe the on-going meter installation, maintenance, and replacement program. State the percentage of the system that is metered. Provide documentation of the annual master meter calibration program and a description of that program. Provide data to show that all permanent water supply services in the receiving area are metered (including public buildings).
- Describe the amount of unaccounted-for water (in gallons and percent) in the receiving area for the past five (5) years. Refer to the Interbasin Transfer Act Performance Standards for the definition of "Unaccounted-for Water". Describe on-going programs to reduce or keep the amount of unaccounted-for water at reasonable levels (less than 10%).
- Describe the current rate structure. Refer to Appendix D of the Performance Standards, available from DCR's website: <http://www.mass.gov/dcr/waterSupply/intbasin/docs/finalps.doc>: (1) Does the rate structure reflect the cost of operation, proper maintenance, proposed capital improvements and water conservation? Does it encourage water conservation? If so, how? (2) Is the rate flat, increasing or decreasing? Is it charged according to water use, or some other method? (3) Are the funds dedicated in an enterprise account or is some other accounting procedure used? Describe.
- How often are customers billed? Is billing based on actual meter readings? Provide an example of the bill sent to customers.
- Provide the existing contingency plans for adequately handling water supply emergencies, such as contamination of water supply sources or seasonal or drought related shortages of water supply. (See 313 CMR 4.02(4) for a definition of 'contingency plan'.) Explain, if not stated in the plan, how and when water use will be curtailed, when trigger points require action, which water users will be reduced by what measures, and over what period of time, what emergency sources will be utilized, such as interconnections with nearby communities, reactivated sources or new emergency sources.
- Do all public buildings under the control of the proponent have low flow plumbing fixtures? Describe the types of fixtures in these buildings.
- When was the last audit of public facilities? Provide a copy of the report. Has a system-wide water audit ever been conducted? When? Provide a copy of the report.
- Describe the program to supply low flow plumbing fixtures to residential customers. What is the residential gallons per capita per day (gpcd) figure for the water supply system? What is the overall gpcd for the system? Provide the Annual Statistical Reports, required by DEP, for the past five years.
- If residential gpcd is greater than 65, describe the comprehensive residential water conservation program that is or will be implemented to reduce this use. If the program is not in place, describe the timetable for implementation. Refer to the Performance Standards.

- Describe the current and proposed public information programs to promote water conservation, the use of water conserving devices, and industrial and commercial recycling and reuse. These programs should include a program which identifies, ranks and works with all commercial, industrial and institutional customers according to amount of use in order to determine areas where the greatest potential for water savings exists, should be in place. Are public education programs on-going or intermittent? Explain.
- Describe the measures in place to protect the water supply sources currently serving the receiving area that meet the requirements of the Department of Environmental Protection published in 310 CMR 22.20 and Wellhead Protection regulations 310 CMR 22.21. Include in this description all watershed or aquifer lands, even if not under the direct control of the water supply agencies.
- Is the plumbing code strictly enforced? By whom? Describe.
- Are there flow meters at location(s) sufficient to document wastewater flows out of basin? Provide a map of appropriate scale clearly showing the meter location(s). (Use of regional sewer meters which document wastewater flows out of basin is acceptable where these meters are in place.) Provide documentation on calibration of these meters.
- Provide at least two years of data on the components of existing wastewater flow (sanitary, inflow, infiltration).
- Are there any measures proposed to mitigate impacts from this transfer? (Such measures could be additional I/I reduction, impervious surface remediation, groundwater recharge, or stormwater management programs consistent with DEP stormwater guidance that keep water in the donor basin.)
- Provide a copy of the DEP-approved Operation and Maintenance plan for the wastewater system.

4. That a comprehensive forestry management program which balances water yields, wildlife habitat and natural beauty on watershed lands of surface water supply sources, presently serving the receiving area and under control of the proponent has been implemented.

- If the community does not have surface water sources, this criterion is not applicable. If the community does, describe existing and proposed watershed forestry management programs on watershed lands currently serving the receiving area and under the control of the proponent. Submit a copy of any applicable forestry watershed plans. Refer to the Interbasin Transfer Performance Standards for the information to be included in a Forestry Management Plan.

5. That reasonable instream flow in the river from which the water is transferred is maintained.

This part should describe the hydrologic characteristics of the river basin from which the water is to be diverted and any interdependent ground water regimen.

- Describe the proposed operating schedule for the interbasin transfer. This description should include variations throughout the seasons, the months, and the hours during a 24 hour period.
- Analyze and evaluate, in detail, the impact of the proposed interbasin transfer on water-dependent uses including:
 - (1) The drainage area above the withdrawal and the distance of the withdrawal point from the nearest surface water body (river, lake, wetland, etc.).

- (2) Effect on the hydraulic characteristics in the stream below the point of withdrawal, including but not limited to flood flows, the aquatic base flow, the 7Q10 flow if used in a pollution abatement program, stage, velocity, sediment regimen, any flow values set for the donor basin by the WRC in DEM River Basin reports, etc.
 - (3) Change in the duration and frequency of the hydraulic characteristics.
 - (4) Effects on water levels of nearby reservoirs, lakes, and ponds and the impacts to the magnitude and duration of flow to associated outlet streams.
 - (5) Effect on anadromous fisheries, specifically alewives, searun brook and brown trout, smelt and American shad.
 - (6) Effect on resident fisheries.
 - (7) Effect on wetlands and dependent flora and fauna.
 - (8) Effects on water quality, recreational uses and aesthetic values, areas of critical environmental concern, areas protected under Article 97 of the Amendments to the Massachusetts Constitution, and designated scenic rivers.
 - (9) Effect on existing and planned future water-dependent uses in the donor basin.
 - (10) Effect on hydropower production.
 - (11) Effect on rare and endangered species of plants and animals
 - (12) Effect on water use by agricultural operations, including nurseries.
- Provide:
 - 1) A daily hydrograph for an appropriate period of record showing the potential changes induced by the transfer for representative drought, normal and wet years. These years are to be determined in consultation with DCR's Office of Water Resources.
 - 2) Available information concerning resources named in the regulations (313 CMR 4.04(5)(h)7.c.iii to vii) that could be affected by the proposed transfer. This data should also include any site specific information that may be requested by the EOEA agencies.
 - 3) A table showing daily streamflow for the representative years listed above, the streamflow resulting from this transfer and the percent reduction in streamflow resulting from this transfer.

6. In the case of groundwater withdrawals, the results of pumping tests will be used to indicate the impact of the proposed withdrawal on static water levels, the cone of depression, the potential impacts on adjacent wells and lake and pond levels, and the potential to affect instream values as listed in 313 CMR 4.05(5)(a) through (j).

- If the proposed source is a ground water source, the pumping test should be used to collect site-specific data to evaluate the effects of the project on instream-flow related resources. Provide the DEP-approved pumping test report to WRC Staff.
- If not included in the pumping test report, the following information should also be provided:
 - A map of appropriate scale of the site clearly the site showing test wells, observation wells, and the location of geological cross-sections
 - Pre-pumping test groundwater elevation contour map
 - End of pumping test groundwater elevation contour map
 - Geologic cross-sections including pre- and end of pumping test groundwater levels
 - Documentation of the groundwater model, if used, describing input and output data, model calibration, water balance data, characterization of water sources to the pumping wells.

7. That the communities and districts in the receiving area have adopted or are actively engaged in developing a local water resources management plan.

- Provide the Local Water Resources Management Plan, or draft of the plan under development and the timeline for completion. Refer to the Interbasin Transfer Performance Standards for the information to be included in a Local Water Resources Management Plan.

8. The Commission shall consider the impacts of all past, authorized or proposed transfers on streamflows in the donor basin.

- List and describe the impact of all past, authorized and other proposed transfers on the streamflow in the donor basin. This would include analysis of any water supply sources or sewer systems that have been recently developed or approved and therefore not captured by the historic hydrographs, consideration of any water supply sources in the new source approval or Water Management Act permitting processes, sewerage plans under development, etc.

MITIGATION

- Describe any proposed flow augmentation provisions, flow protection thresholds, or other measures proposed to protect instream flow. This should include incorporation of any known stream flow threshold(s) (for example, from a DEM basin plan, federal or state law, previous IBT decision, or DEP requirement) into the proposed operating regimen.
- To the extent the EIR/IBT process identifies impacts that may need to be mitigated, the proponent should propose measures to mitigate these impacts. Proponents should consider such measures as additional I/I reduction, impervious surface remediation, groundwater recharge, or stormwater management programs consistent with DEP stormwater guidance that keep water in the donor basin.

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Provide information to demonstrate that this proposal seeks to minimize unnecessary loss or depletion of environmental quality and resources.

All Interbasin Transfer EIRs should be sent to the following people. This is only a listing of those people who will be reviewing the EIR specifically under the Interbasin Transfer Act and is not meant to be all inclusive.

| | |
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| Kathleen Baskin Executive Director Water Resources Commission EOEA 100 Cambridge Street Boston, MA 02114 | Margaret Kearns DFG Riverways Program 251 Causeway Street Boston, MA 02114 |
| Michele H. Drury (3 bound copies and one electronic copy) DCR Office of Water Resources 251 Causeway Street, Suite 600-700 Boston, MA 02114 | Paul Diodati Division of Marine Fisheries 251 Causeway Street Boston, MA 02114 |

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| Linda Hutchins DCR Office of Water Resources 251 Causeway Street, Suite 600-700 Boston, MA 02114 | Jack Schwartz DMF Annisquam River Marine Fisheries Field Station 30 Emerson Ave. Gloucester, MA 01930 |
| Bruce Hansen DCR Office of Water Resources 251 Causeway Street, Suite 600-700 Boston, MA 02114 | NHESP DFG 1 Rabbitt Hill Rd Westboro, MA 01581 |
| Duane LeVangie DEP 1 Winter Street Boston, 02108 | The Public Libraries of the affected communities in both the donor and receiving basin |
| Richard Hartley DFW 1 Rabbitt Hill Rd Westboro, MA 01581 | |



THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

May 4, 2009

Mr. Peter Sellers
Department of Public Works
150 Concord Street
Framingham, MA 01702

Dear Mr. Sellers:

Staff for the Water Resources Commission (WRC) reviewed Framingham's December 30, 2008 letter and determined that some statements required follow-up. In particular, we wanted to verify Framingham's characterizations of the capacity of the original Birch Road wells. Framingham's letter indicated that the peak water demand experienced in 1950 was provided solely by the Birch Road wells. However, WRC staff discovered that Framingham had been using water from the Metropolitan District Commission (MDC) since the 1920's. Review of historic records indicated that a significant portion of Framingham's 1950 demand was met by MDC. This contradicts the statement in Framingham's December 30th letter (second page, 3rd paragraph), "From 1940 until 1951, these (Birch Road) wells were the Town's only source of public water supply." The amount supplied by the MDC during the time frame referred to in this statement ranged from 3,700 gpd in 1942 to 1.29 MGD in 1950.

Additional research was conducted to establish appropriate values for the original capacity of the Birch Road wells. Many documents and records were available in the MDC (now Department of Conservation and Recreation - DCR) archives for review and we find that the maximum original capacity of the Birch Road wells that could be credited for the purposes of the Interbasin Transfer Act is 3.00 million gallons per day (MGD).

In the review process, we found a report completed for Framingham by Metcalf & Eddy in 1968 (Master Plan for Improvements to the Water Supply and Distribution Facilities). What we learned from that report:

- The Saxonville Wells (aka Birch Road Wells) were installed 1939.
- The 1968 combined dependable yield was 2.5 MGD.
- In 1966, an average of 1.9 MGD was pumped.
- Each well had a 75-hp pump which could be controlled off of Indian Head Hill Reservoir, although, at the time, it was controlled manually for continuous operation (p. 6).
- **Each well was originally capable of delivering water at the rate of 1.00 MGD** but yield had fallen off from clogging (p.30) and low groundwater levels.
- Metcalf & Eddy concluded that if Well No. 1 was cleaned and groundwater levels returned to pre-drought conditions, the wells might produce up to 3.00 MGD (p.49).

In addition, the Army Corps of Engineers (ACOE), 1980 Report: Abandoned or Reserve Water Supplies, Metropolitan District Commission Area states:

- Lake Cochituate Wells (aka Birch Road Wells), **Last Reported or Estimated Yield: 3.00 MGD**; removed from service because of poor water quality; after 1966, used only during the summer months.

We have attached relevant portions of these documents for your review.

The 4th paragraph on page 2 of the December 30th letter stated: "It was noted in the W(hitman) & H(oward) report (1978) that the dependable yield of these (Birch Road) wells was 2.5 MGD and that the Town's peak day demand in 1950 was greater than two times the average day, which further supports a capacity greater than the 4.3 MGD withdrawal currently planned." According to calculations using volumes contained in letters found in DCR's archives, Framingham took a net average of 1.29 MGD from the MDC during 1950. Since the average day demand was 2.7 MGD (W&H, 1978), this means that the town supplied on average 1.41 MGD ($2.7 \text{ MGD} - 1.29 \text{ MGD} = 1.41 \text{ MGD}$). The ratio of maximum day use to average day use in 1950, according the 1978 W&H report was 2.00, which would mean (following the reasoning in the Framingham letter on page 2 paragraph 4), the wells supplied a maximum of 2.82 MGD ($2 \times 1.41 \text{ MGD}$).

WRC Staff also found a letter dated March 22, 1948 stating that during the past year (1947), Framingham's total consumption was approximately 907 million gallons (MG); 212 MG of which was pumped from the MDC Aqueduct at Winter Street. ($907 - 212 = 695 \text{ MG}$ supplied by wells, or 1.9 MGD).

There are documents on DCR microfilm that also list Framingham's use of MDC water through the 1930's and 1940's, which leads us to the conclusion that although Framingham's maximum day demand may have historically been up to 5.5 mgd by 1950, not all of this demand was satisfied by the Birch Road Wells.

Based on this review and analysis, WRC Staff has concluded that the original capacity of the Birch Road Wells for Interbasin Transfer Act (ITA) purposes is, at the most, 3.00 MGD. If Framingham desires to increase the capacity of these wells beyond this amount when the Town rehabilitates them for public water supply use, it will need some level of ITA review and approval.

If you have any questions, please feel free to call me at 617-626-1012.

Sincerely,

Kathleen M. Baskin, P.E.
Executive Director

cc: Water Resources Commission
Jonathan Yeo, DCR
Eric Worrell, DEP NERO
Erin Graham, DCR
Michele Drury, DCR
Linda Hutchins, DCR
James Persky, DEP NERO
Jon Beekman, SEA