



July 31, 2009

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: Anne Canaday, MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Subject: EOEEA #14197, Framingham Birch Road Wellfield Redevelopment and Water Treatment Plant DEIR

Dear Secretary Bowles:

The Department of Conservation and Recreation (DCR) has reviewed the Draft Environmental Impact Report (DEIR) for the Birch Road Wellfield Redevelopment and Water Treatment Plant (Project) that was submitted by the Town of Framingham Department of Public Works (Proponent). In keeping with our mission to protect, promote and enhance our commonwealth of natural, cultural and recreational resources, DCR provides the following comments and recommendations concerning potential recreational and environmental impacts the proposed Project may have on the adjacent DCR-managed Lake Cochituate. Lake Cochituate and Cochituate State Park are premiere recreation facilities in Eastern Massachusetts. Cochituate State Park hosts 200,000 visitors annually, $\frac{3}{4}$ of them using the lake for recreation. Along with our visitors, there are 220 abutters around the lake in three communities. These abutters have docks, moorings and swim permits around the three bodies of water which make up Lake Cochituate.

In our policy and planning role as steward of statewide water resources, DCR's Office of Water Resources (OWR) also submits comments related to the potential impacts of the proposed Project on the Sudbury River. OWR partners with the United States Geological Survey (USGS) in extensive research to determine alterations in the natural flow regimes of the Commonwealth's rivers, including a surface water runoff model of the Sudbury, Assabet, and Concord River Basins.

Framingham has requested that the DEIR act as the Final Environmental Impact Report (FEIR), claiming that remaining issues can be addressed by the Water Management Act permit and impacts can be mitigated by increasing the use of MWRA water during dry periods. As detailed below, DCR maintains that the Proponent has not provided sufficient information to assess the impacts of the Project on recreational activities at Lake Cochituate, and on the environment of Lake Cochituate, Cochituate Brook, and the Sudbury River. In particular, the Proponent contends that Lake Cochituate will be drawn down a maximum of three inches as a

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result of pumping. For the reasons stated in Sections 6 and 7 of DCR's Technical Comments, attached hereto as Attachment A, DCR is unable to assess the Proponent's conclusions.

Additionally, the Proponent's use of a surface water model, standing alone, is insufficient to determine the maximum amount of drawdown and the impacts of lower water levels on the lake and the watershed. DCR believes that such a model does not take into account the complex hydrogeology at the north end of the lake. (See Sections 6 and 7 of the Attachment.) More importantly, DCR believes that use of a ground water model is a more effective means of evaluating the impacts to Lake Cochituate and the Sudbury River.

A summary of our concerns is provided below. Specific technical comments on the DEIR, coupled with specific requests for additional information, are attached.

Impacts to Recreational Resources

Maintenance of Lake Cochituate water levels is critical for boating passage between the three ponds in the Lake Cochituate complex; operation of the boat ramp at the state park; and to allow flow releases from the reservoir to Cochituate Brook, which feeds the Sudbury River, a key component of the watershed which DCR is charged with managing and protecting. Drawdown of Lake Cochituate by ground water withdrawals from the proposed Birch Road Wells would adversely affect all of these activities. Even absent the proposed withdrawals from the Birch Road wells, DCR has experienced difficulties in maintaining appropriate water levels in Lake Cochituate in recent years, thereby affecting the recreational opportunities available to park visitors.

In the DEIR, Framingham discussed potential impacts on boating at two openings between the three-lake complex (specifically, openings beneath Route 30 and the Mass Turnpike). However, DCR believes the Proponent's analysis is incomplete as it does not assess two other openings that are used for boat passage – the Key Hole culvert and the Route 9 culvert. The Proponent proposes dredging at two of the openings, which may be sufficient; however, the two culverts cannot be dredged, but would have to be completely reconstructed. Also, the Key Hole culvert is considered a historic structure and any alterations or work at this location may be difficult to permit.

As noted above, the Proponent does not adequately characterize Lake Cochituate levels and the management of the dam in the DEIR. Lake Cochituate is comprised of three ponds which drain out of the north end of the lake to Cochituate Brook, which, in turn, drains into the Sudbury River. DCR staff operate a dam at the northern end of the lake at the Cochituate Brook outlet in order to maintain water levels at all three ponds. DCR's operations serve to maximize recreational opportunities while, at the same time, provide releases to Cochituate Brook.

Against this backdrop, DCR maintains that changes in the lake level will affect milfoil distribution in Lake Cochituate. DCR and its municipal partners have spent countless hours and resources attempting to control this non-native aquatic species. Lowering the lake level in the summer months beyond the current low lake levels would allow sunlight to penetrate to a

greater overall depth, which could possibly give this invasive non-native plant an additional advantage over the natives and expand the milfoil habitat. Given these concerns, DCR requests that Framingham analyze how the reduction in water levels will affect native flora and fauna in Lake Cochituate.

Lower lake levels will also change the current depths of all swim beaches (including the DCR beach, the Amputee Veterans beach, and Wayland and Framingham town beaches). In the beginning of the summer recreational season the swimming areas at Lake Cochituate have a depth no greater than 6 feet. However, as the summer progresses, water levels in the lake typically decline, and it is not uncommon for the depth of water to be reduced to 5 feet. The back edge of the swimming beaches have a steep drop off from years of beach nourishment, and this ledge will be closer to shore and will pose a greater threat to shallow water users (i.e. young children, disabled veterans, etc.) if the lake level were to decline even by three inches. In recent years, DCR has struggled with water shortages at the Cochituate State Boat ramp. As the lake water level decreases, it becomes increasingly difficult to launch boats. DCR believes the lowering of the lake by three inches, as concluded in the DEIR, would necessitate a major overhaul to the boat access ramp. At the very least, the lip at the end of the boat ramp would have to be reconstructed to allow launching.

Hydrogeologic Analysis and Impacts to Water Resources

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.

DCR's comments on the Expanded Environmental Notification Form (EENF) for the Birch Road Wells 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 re-circulating the water back "upstream" from the Birch Road wells. The EENF revealed that 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. DCR requests that Framingham conduct revised ground water modeling, since the pumping test observations were affected by the recirculation.

DCR further requests that the revised ground water model 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; and 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. Finally, DCR requests that complete documentation for the ground water model be provided to DCR's Office of Water Resources.

The DEIR analysis of impacts on the Sudbury River shows that interception of 4.3 million gallons per day (MGD) of ground water by well withdrawals would constitute up to 12 percent of median monthly mean flows at the oxbow near the Birch Road site. DCR notes that 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 to deplete streamflow. Impacts to the monthly flow statistic are typically most significant during the dry summer months of July through October. Based on the foregoing observations, DCR has strong reason to believe that impacts to some daily flows would be more significant than reflected in the DEIR. DCR accordingly requests that these impacts be monitored and mitigated. DCR also requests that the time delay of pumping alterations on streamflow be assessed in the FEIR, in order to design an appropriate mitigation plan.

Based on the foregoing concerns, DCR asks the Secretary to request that the Proponent include revised modeling results in the FEIR to assess these environmental and recreational impacts. DCR would be pleased to meet with the Proponent prior to submittal of the FEIR to fully explain the needs for water level maintenance at Lake Cochituate. Thank you for taking these comments into consideration. Please contact Linda Hutchins, Hydrologist at (617) 626-1384 if you have any questions or require additional information.

#14197
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Sincerely,

A handwritten signature in black ink, appearing to read 'R. Sullivan, Jr.', with a stylized flourish at the end.

Richard K. Sullivan, Jr.
Commissioner

Cc: Peter Sellers, Framingham DPW
Jon Beekman, SEA
Jim Persky, MassDEP
Duane LeVangie, MassDEP
A. Backman, A. Carroll, L. Dietz, J. Dwinell, B. Hansen, F. Hartig, L. Hutchins, N.
Tipton, J. Yeo (DCR)

Attachment A
DCR Technical Comments on Framingham Birch Road Wells DEIR
MEPA #14197
July 31, 2009

Section 4. Stormwater

Page 4-3. Section 4.1.1 Lake Cochituate Water Quality refers to replacing approximately 10 percent of catch basins with deep sump catch basins with hoods to improve water quality and sediment capture. In order to fully assess impacts on Lake Cochituate, DCR requests details as to the numbers and locations of the targeted catch basins. DCR further recommends that this work be completed in association with the well approval, that an Operation and Maintenance (O&M) plan be developed and implemented for all improvements, that the Proponent commit to ongoing O&M, and that a detailed schedule for these recommended improvements be provided in the FEIR.

Section 6. Water Budget

In order to evaluate the effect of pumping the Birch Road Wells, the Proponent developed a Water Budget model for the Lake Cochituate watershed. Most of the assumptions used in the Water Budget 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 on the Natick wells. A ground water model that incorporates all elements of the conceptual geohydrology in the area of the Birch Road 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. DCR requests that this model be provided to technical staff at DCR and MassDEP.

Section 6 (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 6.4 (page 6-6) states that DCR manages Lake Cochituate levels for recreation. DCR notes that the dam on the lake is also managed to maintain streamflow in Cochituate Brook. DCR asks that this observation be taken into account in the Water Budget model.

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 stream flow 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 stream flow is not adequate to realistically describe that impact. There is no consideration of the complex hydrologic conditions, documented in the USGS reports cited in the DEIR, that are 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 the 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 that DCR can effectively assess the impacts of the Project on its assets, DCR requests that the FEIR present findings using a ground water model.

In Section 7.1.2 on page 7-5, the Proponent does not appear to take into account ground-water outflow from the north end of Lake Cochituate and possibly other locations.

Section 7.1.2.1 on page 7-5 references estimation of daily evaporation rates from an annual evaporation rate. Instead, monthly NOAA data for pan evaporation should have been used. The evaporation rate should go to zero when there is ice cover on the lake.

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. DCR requests that the Town 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.

Units should be provided for parameters displayed in Tables 7-5, 7-6, and 7-9. On Table 7-8, the rows describing August flows appear to be mislabeled; flows appear higher with Birch Road wells operational than with Birch Road wells off.

Section 7.5 Lake Cochituate Impacts, page 7-25 concludes that 3 inches is the maximum expected water level impact on Lake Cochituate. Page 7-26 suggests that the boat openings are the primary issue at Lake Cochituate and that 3 inches of sediment removal from the bottom of these would resolve the impacts of pumping. The culverts (between Middle and North Pond) contain large rocks, highway debris and sediment that will make it impossible to remove just 3 inches. Also, the distribution of the sediment varies with the amount of flow through the culverts. A universal depth or benthic profile should be considered. The water depths and clearance allowances stated in Section 7.5 are from the old Mass Highway "as built" plans. Actual bathymetry of the entire length of each culvert would have to be measured prior to mitigation. As an alternative, Framingham could dredge the structures down to their original depths.

Page 7-25 and 7-26 of the DEIR describe the Route 30 overpass and the MA Turnpike overpass, but does not mention the Key Hole Culvert (a historical structure) and the Route 9 culvert which are also used for recreational boat passage and which will be affected by a lake level drawdown at Lake Cochituate. (The Route 9 culvert was improved by the town of Natick/MassHighway in 2008, and current lake levels were used in the design of this structure.) In addition, DCR notes that the DEIR does not address the effect of water level change between South and Middle pond. The structure here (Key Hole Culvert) is very restrictive and water level after rain storms or during dry periods often limits boat access. DCR requests that the Proponent assess the affects of a lower water level at all of the boat passage structures in the FEIR.

Lake Cochituate has both summer and winter recreational uses. A drop in water level in the winter could create a dangerous situation for the multitude of users (cross-country skiers, ice fisherman, etc.) In the summer, lower levels could expose hazards to tubers, water-skiers, crew teams, kayakers, etc.

On pages 7-27 through 7-30 (Section 7.6 Cochituate Brook Impacts), the Proponent 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. DCR notes that these impacts are significant and require monitoring and mitigation. 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. DCR requests that the FEIR include an assessment of the delayed response of pumping on the lake level so that appropriate mitigation measures can be evaluated.

DCR notes that exposing land under water in South Pond is prohibited as a result of sediment contamination associated with the US 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. Additionally, potential impacts of pumping the Birch Road wells on the well yields of the Wayland and Natick Well fields or remedial actions at the Army site should be analyzed in the FEIR, 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.

DCR's prior comments submitted for the EENF regarding the ground water model presented in the "Source Final Report" and referenced in Section 7.8 (page 7-36) remain unchanged.

In Section 7.9 Wayland Wells (page 7-37), 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. DCR recommends ground-water monitoring near Lake

Cochituate and Dudley Pond to document the effects of long term pumping at the Birch Road wells.

Section 10. Mitigation

Page 10-6, section 10.7, Lake, Brook and River Mitigation suggests a thoughtful withdrawal management plan within the context of the Water Management Act to minimize impacts. DCR agrees that a withdrawal management plan would be appropriate for the Birch Road wells. This can be accomplished in conjunction with an Interbasin Transfer Act review by the Massachusetts Water Resources Commission and the DEP Water Management Act program.

Section 10.7.5, Surface Water Level Monitoring (page 10-7) 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. DCR agrees that baseline monitoring would be useful to a future mitigation plan, and notes also that monitoring ground water levels coincident with the streamflow monitoring would be useful to a later management plan. Operational monitoring at these locations would also be useful.

DCR notes that Section 10.6, Construction Phase Mitigation does not mention decontamination procedures for equipment and/or soils that will be brought into the area. A monitoring plan for non-native species, both aquatic and terrestrial, should be included in the FEIR.