



**COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Metropolitan Boston – Northeast Regional Office**

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May 19, 2003

Stephen Smith, Executive Director
Lynn Water and Sewer Commission
390 Parkland Avenue
Lynn, MA 01905

Re: Water Management Permit Review
Permit 9P-3-17-163.01 - Ipswich River Basin
Permit 9P-3-18-163.02 - North Coastal Basin

Dear Mr. Smith:

The Department of Environmental Protection (the "Department" or "DEP") has completed its review of all the Water Withdrawal Permits issued in the Ipswich River Basin including the Permit issued to the Lynn Water and Sewer Commission (the "Commission") Permit 9P-3-17-163.01 (Ipswich River Basin) and 9P-3-18-163.02 (North Coastal Basin). The Permit issued in 1991 authorized the Commission to withdraw an annual average daily volume of 0.33 million gallons per day ("MGD") from the Ipswich River Basin and the North Coastal Basin. The Permit further allowed the Commission to increase that annual average daily volume to 1.28 MGD in 1999 through 2004. The volumes authorized by the Permit are in addition to the 8.93 MGD that the Commission was registered to withdraw from the North Coastal Basin and the 5.31 MGD that the Commission was previously registered to withdraw from the Ipswich River Basin during the 180 days from December thru May.

In accordance with the Water Management Act Regulations, 310 CMR 36.33(4), the Department initiated a review of the Permit in 1994. As a result of that review, the Department determined that water use by all permittees in the Ipswich River Basin was below the volumes originally allocated. Accordingly, the Permit as modified in 1997 provided that the authorized annual daily withdrawal volume shall remain at 0.33 MGD until 1999, when permits were expected to be further modified pending United States Geological Survey (USGS) studies in the Ipswich River Basin. The USGS studies took longer than expected.

This information is available in alternate format. Call Aprel McCabe, ADA Coordinator at 1-617-556-1171.

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After the USGS 2002 study was nearly complete, on December 13, 2002, DEP issued an Order to Complete requiring the Commission to submit additional information. The Commission responded to the Order to Complete on March 14, 2003. DEP has reviewed the information from the USGS studies to date along with the Commission's Response to the Order to Complete and has issued the Modified Permit (enclosed herein) that reflects a balance between the public's need for a safe and reliable source of drinking water and competing environmental, economic, and recreational interests.

As a result of this review, DEP has determined that to further the purposes of the Water Management Act, it is necessary to achieve a balance throughout the year between the major hydrologic alterations in flow caused by the diversions from the Ipswich River for water supply purposes and the need to maintain the seasonal variations in flow that support the natural ecosystem. The Department has determined that maintaining high flows at certain times of the year is necessary to ensure that the river functions both as a viable habitat for aquatic life and wildlife and as a reliable source of safe drinking water. High flows scour the river bottom, maintain floodplain ecosystems, trigger spawning runs, provide spawning habitat in the floodplains, maintain wetland hydrology, and recharge aquifers. In the absence of adequate diversion thresholds, it is possible that the total volume of water diverted from the Ipswich River by public water suppliers may approach or even exceed the flow remaining in the river, if droughts occur in late fall, winter or spring. Loss of water during late fall, winter and spring may adversely affect the availability of habitat, susceptibility to freezing, geomorphological processes and other ecological values. (Ipswich River Fisheries Report, 2002)

To address these concerns, the Ipswich River Fisheries Restoration Task Group (the "Fisheries Group") recommended the streamflows that are needed to sustain a viable habitat for aquatic life accommodated to riverine conditions throughout the year. These Fisheries Group recommendations are as follows: November thru February, 1.0 cfs; March thru May, 2.5 cfs; and June thru October, 0.49 cfs.¹

To begin the process of mitigating these adverse impacts, the Department has established interim streamflow diversion thresholds. These interim streamflow diversion thresholds incorporate the recommendations of the Fisheries Group for the months November thru February. To balance the need for drinking water with competing environmental concerns, the Department established an interim streamflow diversion threshold of 1.0 cfs for the months March thru May, in lieu of the threshold recommended by the Fisheries Group. Although the interim streamflow diversion threshold is not as protective as the threshold recommended by the Fisheries Group, the Department's initial review indicates that the three public water suppliers that divert from the Ipswich River can meet the needs of their consumers under this threshold. The Department also established an interim streamflow diversion threshold based on the 90th percentile magnitude for June's monthly mean discharge simulated for no-withdrawals which is

¹ Relying on the minimum streamflow findings in the USGS Ipswich River Habitat Study (WRIR 01-4161) and other USGS studies in the Ipswich River Basin, the Department adopted a 0.42 cfs threshold for the low flow period, June thru October. Additional discussion of this threshold is included in the discussion of streamflow triggers for restrictions on nonessential outside water use.

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approximately 3 cfsm for June thru October. While still protective of ecological function, this additional interim streamflow diversion threshold allows the public water suppliers that divert from the Ipswich River to take advantage of the high flows that occasionally occur in the summer, after significant storm events, such as hurricanes.

Because the Fisheries Group recommendations are based on the best available science, it is very possible that the Department may in the future adopt their streamflow recommendations for the months March thru May as it continues to balance the need for drinking water with competing environmental concerns. For that reason, the Modified Permit expressly provides that the interim streamflow diversion thresholds shall remain in effect, only until the Department gathers sufficient information to establish additional interim streamflow diversion thresholds or final streamflow diversion thresholds. The additional information relevant to determining final streamflow diversion thresholds includes without limitation the ongoing supplemental modeling by the USGS to evaluate alternative management scenarios for a firm yield determination.

While these interim streamflow diversion thresholds are in effect, the Modified Permit requires that each public water supplier that diverts water from the Ipswich River identify additional actions that are needed to meet demand after final streamflow thresholds are adopted. Thus, the Modified Permit expressly requires that the Commission evaluate ways to optimize the use of its existing sources along with an increase in the volume of water purchased from the MWRA.

The Department has taken a similar approach with regard to the Commission's Saugus River diversion. Because of the complexity of managing flows for Reedy Meadow, flood control, flows in the Ipswich River, and flows in the Saugus River, while meeting drinking water needs, the Department is establishing recommended rather than required interim streamflow diversion thresholds for the Saugus River at this time. The Department commends the Commission's recent management practices at the Saugus River Diversion Dam and its efforts to follow the recommendations in the Gomez and Sullivan Engineer's (GSE) Water Budget and Instream Flow Study Report (2002) (the "GSE Report"). These recommended interim streamflow diversion thresholds are consistent with the GSE Report. The Department expects that additional experience in applying these thresholds, further data collection and analysis, including the installation of flow meters and a staff gauge, along with the USGS study on firm, yield, will enable DEP to establish required interim streamflow diversion thresholds or final streamflow diversion thresholds for the Saugus River.

In addition to the streamflow diversion thresholds for the Ipswich River and the Saugus River, the Department has determined that a total authorized volume on an annual average basis of 11.88 MGD in both basins is sufficient to meet the demand for water in the City of Lynn. In these circumstances, the Department has decided to limit the Commission's permitted volume in the Ipswich River Basin and the North Coastal Basin to the 0.33 MGD originally authorized in 1991.

DEP has further determined that unless and until conditions in the Ipswich River significantly improve, it is unlikely that any permittees in the Ipswich River Basin will be

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approved to increase their authorized withdrawals. In these circumstances it is essential that all permittees keep their withdrawals at or below their authorized volumes,

Consistent with this purpose, the Modified Permit provides that if the Commission exceeds its total authorized volume of 11.88 MGD, the Commission shall implement a water bank that provides for conserving at least two gallons of water for every additional gallon of water demand.

To reduce the adverse impacts on the ability of the Ipswich River to sustain all its uses, DEP has established the following performance standards for permittees that withdraw water from the Ipswich River Basin for water supply purposes:

1. Residential per capita water use of 65 gallons per day or less;
2. Unaccounted for water of 10% or less; and
3. A summer withdrawal cap based on minimizing the difference between summer (May thru September) and winter (January thru March and November thru December) withdrawals derived from each community's summer to winter withdrawal ratio.

The standards set forth above shall hereinafter be referred to collectively as the "Ipswich River Basin Performance Standards".

The standards of 65 gallons per day or less for residential per capita water use and 10% or less for unaccounted for water are taken from the Water Resources Commission performance standards for effective water conservation for public water suppliers. While these performance standards represent the minimum standards required for compliance with the Modified Permit, the Department believes that through the implementation of all the terms and conditions of the Modified Permit, the Commission can exceed the performance standards for residential per capita water use and unaccounted for water. DEP will review the Drinking Water Program's Annual Statistical Report when evaluating compliance with these performance standards. The reporting requirements added in the Modified Permit are intended to standardize the information submitted to the Department to assess compliance with the Modified Permit and the Ipswich River Basin Performance Standards.

The Department has established a summer withdrawal cap that targets conservation when demands are especially high. More specifically, the summer withdrawal cap is intended to reduce the difference between summer and winter water use. Based on the four- year period 1999 thru 2002, communities with an average summer to winter withdrawal ratio of 1.4 or greater are required to reduce the summer to winter difference in withdrawal volumes by 50% beginning in calendar year 2004. Communities with an average summer to winter withdrawal ratio that is less than 1.4 are required to reduce the summer to winter difference by 25% beginning in calendar year 2004. The median of the four -year summer to winter withdrawal ratio is 1.4. Reductions in the summer to winter difference are based on the year, within the four -year period from 1999 thru 2002, when seasonal water use was highest.

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In the four-year period 1999 thru 2002, Lynn had an average summer to winter withdrawal ratio of 1.13. Lynn experienced its highest summer water use in 1999. The Commission shall achieve a 25% reduction in the difference between its 1999 summer and winter water use in Lynn. To achieve this reduction, the Commission shall keep Lynn's water use at or below an average daily volume of 10.76 MGD from May 1st thru September 30th. Lynn's overall system-wide use from May 1st thru September 30th shall not exceed 1,646.28 million gallons. In 2000, the Commission was able to limit Lynn's seasonal water use to an average daily volume of 10.53 MGD for the five-month summer period.

To improve streamflows so that the Ipswich River can once again function as a viable habitat for aquatic life adapted to riverine conditions and to ensure that the Ipswich River remains a reliable source of safe drinking water, DEP has required the following restrictions on nonessential outside water use:

1. All permittees withdrawing water from the Ipswich River Basin for public water supply purposes shall institute voluntary restrictions on nonessential outside water use, whenever streamflow in the Ipswich River falls below 0.56 cubic feet per second per square mile of drainage basin (cfs/m) for three consecutive days in the period from May 1st thru September 30th. The streamflow threshold of 0.56 cfs/m is based on wetted perimeter flow for a natural site in the Ipswich River as determined by the USGS habitat assessment study. A fully wetted channel bed in riffles is an index of the carrying capacity of a stream that is proportional to fish-food producing areas.
2. All permittees withdrawing water from the Ipswich River Basin for public water supply purposes shall implement and enforce mandatory restrictions on nonessential outside water use, whenever streamflow falls below 0.42 cfs/m for three consecutive days in the period from May 1st thru September 30th. Based on evaluation of streamflow requirements, USGS determined that 0.42 cfs/m is a reasonable target for streamflow for habitat protection necessary to support aquatic life adapted to riverine conditions. At a minimum, mandatory restrictions on nonessential outside water use shall include restrictions requiring hand-held hoses only and limiting the hours for outside watering to exclude 9 a.m. to 5 p.m. when evapotranspiration is typically the highest. Notwithstanding the foregoing, irrigation of public parks and recreational fields by means of automatic sprinklers equipped with moisture sensors or similar control technology may also be permitted outside of the hours 9 a.m. to 5 p.m. Enforcement of mandatory restrictions shall include the assessment of penalties or the imposition of fines for violations.

A notice of the voluntary and mandatory restrictions shall be published in the local newspaper. When streamflow is greater than the thresholds set forth above, for a period of seven consecutive days, the corresponding level of restrictions may be lifted.

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The restrictions set forth above apply to nonessential outside water use. The term “nonessential outside water use” includes uses that do not have health or safety impacts, are not required by regulation, and are not needed to meet the core functions of a business or other organization. Examples of nonessential outside water uses include irrigation of lawns and ornamental plants; washing of vehicles unless necessary for operator safety (subject to the exceptions set forth below); washing of building exteriors, outside structures, streets, sidewalks and parking lots (with the exceptions set forth below); the filling of swimming pools and hot tubs; and the operation of decorative pools and fountains. Examples of essential outside water uses may include water use for the production of food and fiber and the maintenance of livestock and poultry; outside water use by plant nurseries to maintain their stock; the watering of golf course greens; the washing of vehicles by commercial car washes, maintenance facilities and dealers, and the washing of exterior building surfaces including windows, parking lots, driveways, or sidewalks, prior to application of paint, preservatives or stucco or for the preparation of the surface prior to paving or repointing of bricks, or if required by health and safety regulations.

To assist the Commission in complying with the Ipswich River Basin Performance Standards for residential per capita water use and seasonal water use, the Modified Permit requires the development and implementation of an enhanced water conservation plan in the event that in any year beginning with calendar year 2004, the Commission is not in compliance with these Performance Standards. In light of this provision, DEP intends to review at least annually the progress that the Commission has made in complying with the Ipswich River Basin Performance Standards and the Modified Permit. Moreover, DEP will take whatever action it deems appropriate to bring permittees into compliance with the modified permits and the Ipswich River Basin Performance Standards, including without limitation, requiring more stringent restrictions on nonessential outside water use, further modifying the permits in the Ipswich River Basin and/or initiating enforcement actions with and without the assessment of civil administrative penalties.

The Department also expects the City of Lynn and all its departments, boards, officers, and employees to cooperate in the implementation of the terms and conditions of the modified permit including without limitation water conservation requirements, the retrofit of public buildings and the source protection requirements. The Water Management Act, G.L.c. 21G, sec. 14, expressly authorizes the Department to issue such orders as are reasonably necessary to aid in the enforcement of the provisions of the Act, including requiring compliance with such terms and conditions as are reasonably necessary to effect the purposes of the Act. If the Department determines that the City of Lynn is not fully implementing the actions called for in the Modified Permit, the Department will take whatever action it determines is appropriate to require Lynn to implement those actions including without limitation the issuance of a unilateral enforcement order under the Water Management Act. That being said, the Department remains committed to working with the Commission, the City of Lynn and all the permittees in the Ipswich River Basin so that the Ipswich River may once again sustain all its uses as a habitat for aquatic life and wildlife that are adapted to riverine conditions, a place for primary and secondary contact recreation, and a reliable source of safe drinking water.

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In closing, the Department wishes to commend the Commission once again for developing an Operating Plan that attempts to manage the Saugus River diversion in a manner that avoids or mitigates harm to the environment. The Department further applauds the substantial financial commitment that the Commission has made to meter replacement and repair. The Commission should make a similar commitment to leak detection and repair so that it can meet the Performance Standard for unaccounted for water.

The Commission has the right to appeal the Modified Permit in accordance with 310 CMR 36.40. Any such appeal must be received by the Department within twenty-one days of the date of receipt of the Modified Permit. Only the portions of the Modified Permit that reflect a modification of the Commission's current permit may be the subject of an appeal, since the period for appealing provisions within the Commission's current permit has expired.

If you have any questions regarding this permit please contact Kellie O'Keefe at 978-661-7765. Please note that the Northeast Regional Office of DEP will be moving in mid to late June to One Winter Street in Boston. Please check the DEP website www.state.ma.us/dep/nero for further information on how to contact regional staff after we move to Boston.

Very truly yours,

Madelyn Morris
Deputy Regional Director
Bureau of Resource Protection

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