CLF Protecting New England's Environment

CONSERVATION LAW FOUNDATION

VIA FEDEX

September 23, 2008

U.S. Environmental Protection Agency
Clerk of the Board, Environmental Appeals Board
Colorado Building
1341 G Street, NW, Suite 600
Washington, DC 20005

Re: Conservation Law Foundation Petition for Review
Upper Blackstone Water Pollution Abatement District
Millbury, Massachusetts
National Pollutant Discharge Elimination System
NPDES Permit No. MA 0102369

Dear Sir or Madam:

Enclosed please find the six copies of Conservation Law Foundation, Inc.'s comment letter submitted to US EPA Region 1 regarding the above referenced matter. The comment letter was referenced as Attachment A in CLF's Petition for Review filed by FedEx on September 22nd but was inadvertently omitted from the filing. Please contact me if additional information is needed at (802) 223-5992.

Sincerely,

Christopher M. Kilian, Esq.

cc: USEPA Region 1
Nathan A. Stokes, Esq.

62 Summer Street, Boston, Massachusetts 02110-1016 • Phone: 617-350-0990 • Fax: 617-350-4030 • www.clf.org

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RHODE ISLAND: 55 Dorrance Street, Providence, Rhode Island 02903 • 401-351-1102 • Fax: 401-351-1130
VERMONT: 15 East State Street, Suite 4, Montpelier, Vermont 05602-3010 • 802-223-5992 • Fax: 802-223-0060

Attachment A

CONSERVATION LAW FOUNDATION

May 23, 2007

U.S. Environmental Protection Agency
NPDES Permits Unit – CPE
One Congress Street – Suite 1100
Boston, MA 02114-2023
Attn: David Pincumbe

Glenn Haas, Director
Division of Watershed Management
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

Re: Comments on Draft NPDES Permit No. MA0102369 – Upper Blackstone Water Pollution Abatement District

Dear Messrs Pincumbe and Haas:

The Conservation Law Foundation ("CLF") submits the following comments on the above-referenced Draft NPDES Permit authorizing the Upper Blackstone Water Pollution Abatement District (the "UBWPAD") to discharge pollutants into the upper reaches of the Blackstone River[1].

Our principal concern is with the Draft Permit's limits on total nitrogen and on total phosphorus, particularly as they impact conditions in Narragansett Bay -- "Rhode Island's most important aquatic resource." (Fact Sheet, at 5.) The Blackstone, although only indirectly connected to Narragansett Bay through the Seekonk and Providence Rivers, is a "major source of fresh water" to the Bay. (Id.) During low flow conditions, the UBWPAD's effluent dominates the Blackstone's flow (Fact Sheet, at 2), and 87% of its nitrogen load is estimated to reach the Seekonk River. (Fact Sheet, at 13-14.)

Excessive nitrogen loadings have caused severe cultural eutrophication in Narragansett Bay, as well as in the Seekonk and Providence Rivers, for many years, resulting in periodic low dissolved oxygen levels and fish kills and the disappearance of most of the 8,000 – 16,000 acres of eel grass that used to be in the Bay, with none left in the upper two-thirds of the Bay and the Providence River. (Fact Sheet, at 11-12.) In addition, the

[1] The comment period has been extended to May 25, 2007.

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UBWPAD's receiving waters, including Upper Narragansett Bay and the Blackstone, Seekonk and Providence Rivers, are on the Massachusetts and/or Rhode Island CWA §303(d) lists as impaired waters and are demonstrably failing to meet the applicable state water quality standards.

As noted in the Fact Sheet, CWA §301(b)(1)(C) requires the achievement of whatever effluent limitations and other limitations are necessary to meet water quality standards. Cost and technological considerations may not be considered in establishing such water-quality based effluent limitations. In re Westborough and Westborough Treatment Plant Board, 10 E.A.D. 297 at 312 (2002). Further, EPA's regulations provide that:

> "No [NPDES] permit may be issued . . . [w]hen the imposition of conditions cannot ensure compliance with the applicable water quality standards of all affected States."

40 C.F.R. §122.4(d)(emphasis added). Any permit issued for the UBWPAD must comply with 40 C.F.R. §122.4(d) and include all enforceable limitations and conditions that will result in the attainment of all of the applicable state water quality standards or demonstrate that there will be no remaining contribution to on-going water quality violations in the receiving waters. This is a high standard, particularly in the case of the seriously impaired waters involved here.[2]

In addition to other supporting data and information in the administrative record or reasonably available to EPA and MADEP, for the reasons set forth in the "Scientific Basis for the Draft Discharge Limits" prepared by Dr. T.J. Stevenson[3], a Total Nitrogen discharge limit equivalent to the limit of technology is necessary. (See Attachment A.) The Rhode Island Department of Environmental Management has defined the current limit of technology as 3 mg/l, and CLF respectfully submits that the final permit's warm weather TN effluent limit should be no higher than 3 mg/l.

CLF also respectfully submits that, for the reasons set forth in Attachment A, the final permit's warm weather total phosphorus limit should be no higher than 0.1 mg/l.

Further, CLF respectfully submits that, for the reasons set forth in Attachment A, the final permit's warm water CBOD limit should be no higher than 10 mg/l, and that that limit should be applicable year round.

In addition to application of limit of technology treatment, the permit must quantify any further contribution of nitrogen and phosphorus to the present water quality standards violations and must include further conditions and limitations designed to ensure that there is no remaining contribution from the UBWPAD to the violations. Such additional

[2] In re City of Marlborough, Massachusetts, Easterly Wastewater Treatment Facility, NPDES Appeal No. 04-13, August 13, 2005, the Environmental Appeals Board remanded the NPDES permit under appeal in that case because the record did not establish that the permit's phosphorus effluent limitation would "ensure" attainment of the applicable water quality standards.

[3] Dr. Stevenson's curriculum vitae is appended hereto as Attachment B.

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enforceable conditions and limitations should be included as an offset to known discharges from the plant.

Lastly, the permit's reliance on seasonal loading limits is also of great concern due to the excess loading of nutrients in the receiving waters. The limited flushing capacity of this system, combined with the persistence of phosphorus and nitrogen in the system, warrant consideration of year round application of controls.

Without aggressive measures to control sources of nutrients, the receiving waters, including Narragansett Bay, will continue their inexorable decline. Unfortunately, despite long-term recognition of the severity of eutrophication impairments in this system, controls are only now being considered for UBWPAD and other contributing sources. Under the Clean Water Act, EPA and MADEP are obligated to assure that UBWPAD eliminate its contribution to present water quality violations in these important waters.

CLF appreciates your consideration of these comments. Please feel free to contact any of the undersigned should you have any questions.

Sincerely,

_____
Peter Shelley, *esq.*

_____
John Davenport, *esq.*

_____
Eloise Lawrence, *esq.*

enclosures

Attachment A

Scientific Basis for the Draft Discharge Limits

Draft NPDES Permit Upper Blackstone Water Pollution Abatement District

Prepared by TJ Stevenson, PhD

Discharges from the UBWPAD are the largest point source of dissolved total nitrogen (TN) to the Blackstone River, which in turn discharges to the Seekonk River. The Seekonk River is the most impaired water body measured in the Narragansett Basin. In turn, the Upper Bay becomes further overloaded with TN as additional Treatment Plants discharge to it. The resulting oxygen stress in the Upper Bay has been demonstrated to be due to TN eutrophication, as cited by the State of Rhode Island.

Many factors come together in a "perfect storm" effect to cause the observed dissolved oxygen stress. Total phytoplankton and algal production are maximized by long duration daylight and by peak annual temperatures accompanied by high nutrient levels. These photo-synthesizers produce an instability in dissolved oxygen, actually increasing it during daylight hours, but reducing it in the dark hours as they respire at a high rate in response to high temperature. At the same time, the dissolved oxygen saturation levels decrease with temperature while the metabolic demands of the benthic and fish populations increase with temperature. Since the phytoplankton/algal blooms distribute over wide areas of the Bay, even mobile species are unable to escape the crashing oxygen concentrations when these suddenly occur. The results are fish kills and, more difficult to observe, the death of benthic communities.

Although no TMDL has been determined for the Upper Bay, the reported fish kills and benthic community declines in the Upper Bay show that the ability of this water body to absorb nitrogen nutrient load has been exceeded by the current TN load to it. The absence of a TMDL means that no TN concentration can be supported as protective on the basis of the capacity of the receiving waters. Consequently, effluent limits must be set to ensure water quality standards are met. These standards include not only numeric criteria, but also beneficial designated uses of a water body, and anti-degradation measures to ensure that existing uses and high quality water is protected and maintained. The Rhode Island Blackstone, Seekonk and Providence River waters are Class B waters and are therefore designated for fish and wildlife habitat. Even low treatment levels in the MERL experiments referenced in EPA's Fact Sheet for the UBWPAD Draft Permit were estimated to produce dissolved oxygen minima of 3.7 mg/l in Bay water. These levels are stressful to fish as referenced below.

Special restoration efforts are being made to restore fish runs and fisheries which historically existed in the Blackstone River, and which linked the Blackstone and the Bay as ecological units. While little known today, the river supported a run of Atlantic Salmon which was noteworthy in Colonial era. Runs of river herring and shad also existed in the River as fish migrated upstream for spawning purposes. The river was therefore the nursery for the juveniles of these species prior to their seaward migrations. Efforts are being made today to restore the herring and shad runs to the river by placing

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Many factors come together in a "perfect storm" effect to cause the observed dissolved oxygen stress. Total phytoplankton and algal production are maximized by long duration daylight and by peak annual temperatures accompanied by high nutrient levels. These photo-synthesizers produce an instability in dissolved oxygen, actually increasing it during daylight hours, but reducing it in the dark hours as they respire at a high rate in response to high temperature. At the same time, the dissolved oxygen saturation levels decrease with temperature while the metabolic demands of the benthic and fish populations increase with temperature. Since the phytoplankton/algal blooms distribute over wide areas of the Bay, even mobile species are unable to escape the crashing oxygen concentrations when these suddenly occur. The results are fish kills and, more difficult to observe, the death of benthic communities.

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Special restoration efforts are being made to restore fish runs and fisheries which historically existed in the Blackstone River, and which linked the Blackstone and the Bay as ecological units. While little known today, the river supported a run of Atlantic Salmon which was noteworthy in Colonial era. Runs of river herring and shad also existed in the River as fish migrated upstream for spawning purposes. The river was therefore the nursery for the juveniles of these species prior to their seaward migrations. Efforts are being made today to restore the herring and shad runs to the river by placing

fish ladders at the several dams in the lower river to be followed by stocking of the river with juveniles of these species. Importantly, herring and shad are extremely sensitive to low dissolved oxygen concentrations. For example, the larval shad LD50 for dissolved oxygen ranges from 2.0 – 3.5 mg/l (Chesapeake Bay Program, 1988).

It is likely that even with a reduction of TN to 3 ppm in UBWPAD discharges to the Upper Blackstone the Upper Bay will still experience periodic water quality violations which will impact benthic and fish species. Each source, including UBWPAD, must do its share of load reduction in order to protect the Class B conditions and support the recreational and commercial fisheries of the Upper Bay. Each discharge must do its fair share in supporting a healthy Narragansett Bay from which many Baymen and commercial fishermen make a living. Consequently, all point source discharges and non-point discharges of dissolved TN must be minimized.

RI DEM has called for the Limit of Technology to be applied to point source discharges within its jurisdiction and it has defined the Limit of Technology to be 3 ppm TN[1]. While it is technically feasible to produce an effluent with no TN, widely employed technologies such as Biological Nutrient Reduction (BNR) can achieve 3 ppm TN with careful management. A TN discharge limit equivalent to this Limit of Technology is warranted, and the Final Permit's war water month TN limit should be no higher than 3 ppm.

In addition to the currently documented dissolved oxygen stress in Narragansett Bay, the NPDES permit should consider the added impacts that will result from global warming over the life of the permit. An increase in Narragansett Bay temperatures of almost 2° F was documented in the 1990's (Nixon, et al, 2003). Changes in the movements of the Gulf Stream which deliver warm water to Rhode Island Sound cannot be predicted, however all expectations are for seawater temperatures to continue to increase. Estimates of the rate of increase vary, but, recalling that oxygen solubility decreases with rising temperature, any increase in the summer temperatures of Rhode Island Sound will also have the effect of raising water temperatures in the Upper Bay. Thus the permit should anticipate that historic temperature regimes in the Bay will be exceeded and baseline dissolved oxygen will decrease during the life of the permit. Again, this argues that no higher TN limit than that technically achievable should permitted.

While I support the development of a TMDL for Upper Narragansett Bay, the current disruption to the ecology of the Bay and the economy of Rhode Island, means that the imposition of a 3 ppm TN limit should not be postponed in the interest of documenting what is already self evident - that the load bearing capacity of the upper Bay is now greatly exceeded during the warm weather months of the year.

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[1] See RIDEM "Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers", indicating that even if that WWTF's discharges were reduced to such Limit of Technology the Seekonk and portions of the Providence River would not fully comply with water quality standards and may not meet EPA guidelines established in Aquatic Life Water Quality Criteria for Dissolved Oxygen (Salt Water): Cape Cod to Caoe Hatteras EPA-822-R-00-012 (http://www.epa.gov/waterscience/criteria/dissolved/index.html)

With respect to Total Phosphorus (TP), I support EPA's draft NPDES Permit limit of 0.1 ppm. Phosphorus is known to be the limiting nutrient in most freshwaters. Due to the historic discharges of P, this nutrient has accumulated in sediments which act as a reservoir for P. Until flushed from the river system, the sediments can re-supply P to the overlying waters consequently, it would be preferred that no additional P is added from point or from non-point sources. However, the draft permit limit of 0.1 ppm TP represents what is technically feasible at this time. No limit higher that 0.1 ppm would support the Massachusetts Water Classification B Warm Water Fishery due to the eutrophic effects of P including oxygen stress during the warm water months of the year.

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