UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
OFFICE OF ECOSYSTEM PROTECTION
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02114

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

NPDES PERMIT NO.: MA0040169

PUBLIC COMMENT PERIOD:

NAME AND ADDRESS OF APPLICANT:

Algonquin Gas Transmission Company
HubLine Pipeline Project
5 Batchelder Road, Suite 200
Seabrook, NH 03874

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

HubLine Pipeline Project
Weymouth Fore River Mouth, Weymouth, Massachusetts
Massachusetts Bay East of Winthrop, MA

RECEIVING WATER: **Weymouth Fore River** (Basin MA74)
Massachusetts Bay East of Winthrop, MA (Basin MA93)

CLASSIFICATION: **Class SB and SA**

I. Proposed Action, Type of Facility, and Discharge Location.

The above named applicant has applied to the U.S. Environmental Protection Agency for issuance of a NPDES permit to discharge into the Weymouth Fore River and Massachusetts Bay East of Winthrop, Massachusetts. The one time discharge consist of an estimated 5.3 million gallons of seawater treated with THPS (biocide) and neutralized with hydrogen peroxide. The permit will be closed out upon completion and testing of the pipeline.

II. Limitations and Conditions.

The proposed effluent limitations and monitoring requirements may be found in the draft NPDES permit.

III. Permit Basis and Explanation of Effluent Limitations Derivation.

A. General Requirements

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

EPA is required to consider a) technology-based requirements, b) water quality-based requirements, and c) all limitations and requirements in the current/existing permit, when developing permit limits. These requirements are described in the following paragraphs.

TECHNOLOGY-BASED REQUIREMENTS

Technology-based requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (see 40 CFR §125 Subpart A). For existing sources, technology-based requirements according to best practicable control technology currently available (BPT) are applied for conventional, non-conventional, and toxic pollutants. More stringent technology-based requirements are applied through best conventional control technology (BCT) for conventional pollutants; and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. New source performance standards (NSPS) are applied to new sources, to control conventional, non-conventional, and toxic pollutants. There are no applicable technology guidelines (effluent limitations guidelines) for this industry. In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1) of the CWA to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ). See 40 CFR §§125.3 (c)(2) and (c)(3).

The factors to be considered in developing BAT limits are set forth at 40 C.F.R. §§ 125.3(c)(2)(i) and (ii) and 125.3(d)(3)(i) - (vi) and include, among other things, the age of existing facilities, engineering issues, process changes, non-water quality-related environmental impacts, and the costs of achieving required effluent pollutant reductions.

WATER QUALITY-BASED REQUIREMENTS

Under Section 301(b)(1)(C) of the CWA and EPA regulations NPDES permits must contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water quality standards.

Water quality standards consist of three parts: (1) beneficial designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00, include these elements. The State will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criterian is established.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to an excursion above any water quality standard (see 40 CFR §122.44(d)). An excursion occurs if the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining "reasonable potential", EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from the permit's reissuance application, monthly discharge monitoring reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the indicator species used in toxicity testing; (4) known water quality impacts of processes on waste waters; and (5) where appropriate, dilution of the effluent in the receiving water.

STATE CERTIFICATION

Under Section 401 of the CWA, EPA is required to obtain certification from the state in which the discharge is located which determines that all water quality standards, in accordance with Section 301(b)(1)(C) of the CWA, will be satisfied. Regulations governing state certification are set forth in 40 CFR §124.53 and §124.55. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.44(d).

B. Water Quality Standards and Designated Uses

Weymouth Fore River has been designated as Class SB waters by the Massachusetts Department of Environmental Protection (MADEP). The Massachusetts Surface Water Quality Standards, 314 Code of Massachusetts Regulations ("CMR") 4.05(4)(b) state that Class SB waters have the following designated uses: *These waters are designated as habitat for fish, other aquatic wildlife and wildlife and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting with depuration (Restricted Shellfish Areas). These waters shall have consistently good aesthetic value.*

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those water-bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such require the development of total maximum daily loads (TMDL). The 1998, 303(d) report states that the Weymouth Fore River Segment MA74-14, *(Route 53 to mouth)*, is not attaining water quality standards because of *pathogens*.

The Massachusetts Bay discharge location has been designated as Class SA waters by MADEP. The Massachusetts Surface Water Quality Standards, 314 Code of Massachusetts Regulations ("CMR") 4.05(4)(b) state that Class *SA waters are designated as an excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting without depuration (Open Shellfish Areas). These waters shall have excellent aesthetic value.*

C. Abbreviated Permitting History

March 28, 2002	Preapplication meeting with representatives of: MACZM, MAMFS, MADEP, TRC Environmental, Maritimes And Northeast Pipeline, and PCS Consultants.
July 30, 2002	NPDES Application submitted to EPA
August 22, 2002	Comments from MAMFS to TRC Environmental
September 5, 2002	EPA Application complete letter
September 20, 2002	Supplemental Information Package submitted to EPA

D. Description of Project and Discharges

Extensive portions of the July 30, 2002 application and September 20, 2002 supplemental information package submitted to EPA by TRC, are quoted or paraphrased in this document without further reference. Both documents are contained in the administrative record for this draft permit.

Algonquin Gas Transmission Company, a subsidiary of Duke Energy Corporation ("Duke Energy"), plans to construct the HubLine Project, an offshore pipeline extending from Beverly, Massachusetts to Weymouth, Massachusetts. The HubLine Project would directly connect the existing Algonquin pipeline system with the Maritimes & Northeast Pipeline.

The purpose of the Project is to provide an alternate delivery point for the Maritimes' system, a direct connection to the Algonquin system, and an increase in the flexibility and reliability of the natural gas pipeline infrastructure serving eastern Massachusetts and southern New England.

The HubLine Project consists of approximately 29.4 miles of 30-inch diameter mainline pipeline which will be constructed primarily in the ocean along the coast of Massachusetts between Beverly and Weymouth. In addition to the mainline pipeline, an approximately 5.4 mile, 24-inch diameter lateral pipeline that will be constructed primarily in the ocean will service the existing Massachusetts Water Resources Authority ("MWRA") wastewater treatment facility on Deer Island. The Deer Island lateral meets the mainline at a sub-sea tie-in (see map, Fact Sheet Attachment A).

The mainline route travels offshore in a southerly direction through the municipal corporate boundaries of Beverly, Salem, Marblehead, Swampscott, Lynn, Nahant, Winthrop, Boston, Hull, Quincy, and Weymouth. At Beverly the pipeline will connect to the Phase III Project facilities, proposed by Maritimes. The Deer Island Lateral will traverse the municipal corporate boundaries of Nahant, Winthrop and Boston.

Project Schedule

Algonquin consulted various agencies, interest groups, and other stakeholders to determine the optimum time of year to construct the HubLine facility to minimize impacts to marine resources, while at the same time providing realistic timeframes to facilitate completion of construction. Algonquin has consulted with the Massachusetts Lobstermen's Association, the Gloucester Fisheries Commission, the Boston Port Operators Group, Nation Marine Fisheries Service ("NMFS"), Massachusetts Division of Marine Fisheries ("MDMF"), United States Coast Guard ("USCG"), United States Environmental Protection Agency ("USEPA"), ACOE, MADEP and other industry and governmental representatives in order to develop the least intrusive construction plan.

The schedule calls for the pipe lay and burial (excluding imported backfill) to be completed no later than April 30, 2003 and for the hydrostatic pressure test to begin by May 15, 2003. These dates are estimated based on the entire construction schedule and could vary by several weeks to a month depending upon contingencies. The filling of the pipeline will be followed by jetting and then backfilling. This may require a month or more to accomplish.

The dewatering and treatment of the biocide treated seawater will be accomplished between these two dates. At the anticipated flow rate, the discharge will last approximately 36 hours. A delay may be realized should unusual weather prove to be a greater obstacle than anticipated.

As part of the marine pipeline installation process, the pipe will be assembled on the deck of a barge and lowered to the sea floor. After the pipe is laid, it will be buried using several different methods including dredging, plowing and a combination of plowing followed by jetting in deeper burial locations. During the jetting operation along the pipeline route, the pipeline sections will be flooded with seawater to help achieve the proper burial depth. The flooded pipe weighs more than an air-filled pipe and therefore tends to sink into the jetted trench more effectively, thereby minimizing the number of passes of the jetting equipment required to achieve proper burial.

Three segments of the HubLine will be filled with seawater to facilitate the burying of the pipe. Two pipeline segments are on the mainline and the third segment is along the Deer Island Lateral. As shown in Attachment A, the first segment (Segment 1) runs from the horizontal directional drill ("HDD") tie-in north of Georges Island to the Beverly HDD tie-in. The second seawater filled section (Segment 2) extends from the HDD tie-in to the Maritimes & Northeast Phase-III Pipeline at Weymouth to the HDD tie-in south of Georges Island. The third segment (Segment 3) is along the Deer Island Lateral.

The flooding of these sections of pipe will involve the withdrawal of seawater totaling an estimated 5,315,311 gallons. The withdrawal will occur at three separate locations. The following table summarizes the position and volume of water associated with flooding each of the three sections.

Summary of Seawater Withdrawal				
Segment	Volume (gallons.)	Fill Location	Latitude	Longitude
Segment 1 (north)	3,686,448	Beverly HDD Exit	42N32'32"	70N 51 F 56"
Segment 2 (south)	1,065,906	Weymouth HDD Exit	42N 14'42"	70N 57' 54"
Segment 3	562,957	Sub Sea Tie-in	42N23'35"	70N 52'26"

The intake pipes will be located off of an offshore vessel. The ¼-inch expanded metal suction screen will be located approximately four feet below the water line as shown in Attachment B. The withdrawal rate at each location will be approximately 2,400 gallons per minute ("gpm"). After passing through the intake and pumps, the water will pass through a filtering system with 100-size mesh filters (0.0059-inch openings) in order to minimize sediments in the floodwater.

Following filtration, there will be a biocide injected into the water stream as it is pumped into the pipeline. Biological growth can develop on the surface of pipe when seawater is in contact with the metal pipe for extended periods of time.

This biological growth can potentially result in microbiologically induced corrosion ("MIC") within the pipe. The processes of concern regarding MIC are the corrosion of the uncoated joints resulting from the growth of sulfate reducing bacteria ("SRB") and acid producing bacteria ("APB") and damage due to hydrogen sulfide produced in the growth of SRB.

The length of time in which MIC develops within the pipe is not exact, although best engineering practices suggest 14 to 90 days. For this Project, Algonquin has adopted the conservative 14-day duration. This decision is based on consideration of the anticipated dependence of end-users on the gas supplied, the minimum 40-year design life of the pipeline, and the difficulty in repairing underwater segments of pipe. Since the seawater will remain in the referenced pipe sections for more then 14 days, a tetrakis hydroxymethyl phosphonium sulfate ("THPS")-based biocide will be used to minimize the risk of MIC. THPS is the proposed biocide because of its effective toxicity to the microbes and the ability for the biocide to be neutralized prior to discharge.

The three sections of pipe will be filled with an estimated total of 5,315,311 gallons of THPS treated seawater. The proposed biocide is a 35% aqueous solution of THPS. The THPS-based biocide will be introduced at the time of the pipe flooding so that the initial concentration of the Magnicide 535 **J** biocide will be approximately 125 milligrams per liter ("mg/1"). The initial concentration may vary based on the length of time the biocide is required to be active within the pipeline. The schedule calls for the seawater withdrawals to commence in mid to late December, 2002 and the pipe lay and burial to be complete no later than April 30, 2003. It should be noted that these dates are estimated based on the entire construction schedule and could vary by several weeks to several months depending upon contingencies. A NPDES permit is only required for the discharges, not for the water withdrawals. The estimated quantity of 125 mg/1 of Magnicide 535 **J** should provide an efficient microorganism growth prohibition for the duration (including contingencies) of the pipeline being filled with seawater.

Discharge of Pipe Floodwater

Once the pipeline has been installed, lowered, backfilled, and tie-ins completed, the gauging plate pig run is initiated. A pig is a device that moves through the inside of a pipeline for the purpose of cleaning, dimensioning, or inspecting. To prove that the pipeline has not been buckled or dented at any stage during the construction period, a gauge plate pig is run through the pipeline as part of the flushing pig train. Biocide treated seawater is pushed out of the pipeline by the gauging plate pig as the pipeline is simultaneously filled with untreated seawater for the hydrostatic testing.

The biocide treated seawater will be flushed from the pipeline, and the effluent will be collected on a barge. The barge will be moored near shore in the Weymouth Fore River for treatment of the water from Pipeline Segments 1 and 2.

The effluent from Segment 3 will be contained on a barge located near the Sub Sea Tie-in at the intersection of the mainline and the Deer Island Lateral. After appropriate neutralization of the biocide (discussed below), the seawater from Segment 1 and 2 will be pumped into a second barge to ensure adequate residence time of the neutralized seawater, which will also be moored in the Weymouth Fore River and then discharged. The water from Segment 3 will be discharged into Massachusetts Bay. The locations of the discharges appear in Fact Sheet Attachment A.

The method for installing the pipeline and connecting the individual sections of underwater pipe (a tie-in), as initially proposed in Algonquin's NPDES application, dated July 30, 2002, would have allowed the release of small amounts of un-neutralized biocide-treated floodwater at each of the tie-in locations. Comments received from the MA CZM and the MA DMF indicated concern over these releases because of the potential for toxic effects in the receiving waters. Algonquin determined that a revised tie-in procedure method could be employed that would reduce or eliminate the potential for biocide treated floodwater release. The new procedure is described below.

Installation and Use of Pigs

During construction of the HubLine Pipeline, three segments of pipeline will be laid on the seafloor and lowered into the seabed using a post-lay plow followed by a jet sled, including: Beverly HDD exit to north end of Georges Island HDD; South end of Georges Island HDD to 20' water depth contour near Quincy; and the Deer Island Lateral.

The pipeline segments will be laid with flanges attached at each end. Prior to lowering the ends to the seabed, a closed pipe or temporary "pig launcher," will be attached via flange to the pipe ends. The pig launcher will contain pigs and will be outfitted with valves to facilitate the filling of the pipeline segment with biocide-treated seawater. A pig is a squeegee-like device composed of rubber disks sized to be slightly larger than the internal diameter of the pipeline. The purpose of a pig is to separate different media within the pipeline. A pressure differential across the pig that is sufficiently great to overcome the friction force inside the pipeline will cause the pig to be forced into and through the pipeline.

Once the pipeline segments are laid they will be partially buried by plowing. Following trenching by plow, these segments will be flooded with biocide-treated seawater. The purpose for flooding the segments is to increase the weight of the segments during the post-lay jetting process thereby enhancing the capability of the jet to lower the pipeline deeper into the seabed. Following the flooding process, in which the air is replaced by pumping the biocide treated seawater into the pipe, the pigs will be located at each end of the pipeline segment to serve as a

plug inside the pipe. The pigs seal the biocide-treated seawater so that when the closed end sections are removed for tie-in of the sections, no treated seawater flows out of the pipeline segment.

Permit Limits For Outfalls, 001 (Fore River) and 002 (Near the Sub Sea Tie-in)

Flow -Flood Water and Hydrostatic Test Water

Flow shall be monitored in accordance with 40 CFR §122.44(i)(1(ii). Flow rate (gallons per minute) may be estimated using pump capacity and hours of operation. The total volume to be discharged is already known.

THPS (tetrakis hydroxymethyl phosphonium sulfate) - Flood **Water**

Magnicide 535™ is an aqueous solution consisting of 35% TPHS, 1.9% polycarboxylic acid dispersant, and water. The biocide is manufactured by Baker Petrolite. The permittee plans to introduce an initial concentration of 125 mg/l of Magnicide 535™ (44 mg/l active ingredient THPS) to the salt water. The biocide will be partially degraded in the pipe. Tests demonstrate that an initial concentration of 125 mg/l of biocide introduced into the pipe will naturally degrade to a concentration of approximately 62.5 mg/l. The addition of hydrogen peroxide prior to discharge will act to further neutralize the active ingredient, TPHS, to a target concentration of 4.4 mg/l or less.

Neutralization of Biocide and Discharge Procedure
As the biocide treated seawater is flushed from the pipeline, the effluent is collected on a receiving barge. The barge will be moored near shore close to the mouth of the Weymouth Fore River for Segments 1 and 2. The effluent from Segment 3 will be contained on a barge located near the Sub Sea Tie-in. The speed of the gauging plate pig regulates the rate of the discharge of biocide treated seawater. The flow rate is estimated at 2,400 gpm.

At the receiving barge, a 3% solution of hydrogen peroxide will be introduced to the effluent water to neutralize any remaining THPS-based biocide. The quantity of hydrogen peroxide necessary to neutralize the biocide will depend on the concentration of the biocide at the time of effluent collection. Continuous hourly field measurements taken at the barge, where the neutralization agent will be added, will be conducted to determine the current concentration of the biocide. Hydrogen peroxide will be added to the seawater based on manufacturer recommendations: 2 to 3 ppm of 3% active hydrogen peroxide per 1 ppm of biocide.

The permittee has stated the intention to use a barge(s) with partitioned tanks which can accommodate approximately one million gallons of treated flood water at each location. The draft permit does not specify the exact volume of the barge as this will be determined by the availability of barges at the time of the dewatering operations. The draft permit shall require sufficient tank volume to insure that no discharge of THPS treated water occurs with a THPS

concentration greater than 4.4 mg/l

Known Effects of THPS on Marine Organisms

The manufacturers of biocides containing tetrakis hydroxymethyl phosphonium sulfate have provided whole effluent toxicity (WET) data for THPS and its principal metabolite, trishydroxymethyl phosphine oxide (THPO).
The Magnicide 535 **J** manufacturer, Baker Petrilite reported the following results for WET tests performed using a product containing 75% active ingredient THPS:

Algae	*Skeletonema costatum*	EC_{50} (Growth Rate)	0.34 mg/l THPS
Algae	*Skeletonema costatum*	EC_{50} (Growth Rate)	4479 mg/l THPO
Invertebrate	*Acartia tonsa*	48 hour LC_{50}	1.29 mg/l THPS
Invertebrate	*Acartia tonsa*	48 hour toxicity	>2143 mg/l THPO
Invertebrate	*Mytilis edulis*	EC_{50}	>1869 mg/l THPO
Invertebrate	*Arenicola marina*	LC_{50}	>2143 mg/l THPO
Invertebrate	*Corophium volutator*	LC_{50}	4659 mg/kg THPS
Invertebrate	Brown Shrimp	48 hour LC_{50}	729 mg/l THPS
Invertebrate	Mysid Shrimp	96 hour LC_{50}	15.6 mg/l THPS
Invertebrate	Oyster shell deposition	EC_{50}	3.4 mg/l THPS
Fish	Juvenile place	96 hour LC_{50}	184 mg/l THPS
Fish	Sheepshead minnow	96 hour LC_{50}	154 mg/l THPS

WET Data from the THPS manufacturer, Rhodia (Tests conducted with product containing 35% TPHS)

Vertebrate	*Cyprinodon variegatus*	96 hour LC_{50} (35% THPS)*	154 mg/l THPS
Vertebrate	*Cyprinodon variegatus*	NOAEC (35% THPS)*	87 mg/l THPS
Vertebrate	*Menidia beryllina*	48 hour LC_{50} (35% THPS)*	209 mg/l THPS
Vertebrate	*Menidia beryllina*	NOAEC (35% THPS)*	62.5 mg/l THPS
Invertebrate	*Mysidopsis bahia*	48 hour LC_{50} (35% THPS)*	34.2 mg/l THPS
Invertebrate	*Mysidopsis bahia*	NOAEC (35% THPS)*	12.5 mg/l THPS
Invertebrate	*Crassoestrea virginica*	48 hour LC_{50} (35% THPS)*	3.4 mg/l THPS
Invertebrate	*Crassoestrea virginica*	NOAEC (35% THPS)*	1.4 mg/l THPS

Invertebrate	*Acartia tonsa*	48 hour LC_{50} (35% THPS)*	3.4 mg/l THPS
Fish	Juvenile place	96 hour LC_{50}	86 mg/l THPS
Invertebrate	*Corophium volutator*	10 day LC_{50}	2174 mg/kg
Invertebrate	*Corophium volutator*	10 day LC_{50} (35% THPS)*	3595 mg/kg
Invertebrate	*Crangon crangon*	96 hour LC_{50}	340 mg/l THPS
Phytoplankton	*Skeletonema costatum*	72 hour EC_{50}	0.16 mg/l THPS
Invertebrate	*Mytilus edulis*	5 day EC_{50}	>872 mg/l THPS
Invertebrate	*Arenicola marina*	10 day NOEC	>1000 mg/l THPS
Phytoplankton	*Skeletonema costatum*	72 hour EC_{50}	2090 mg/kg THPS

*Testing was performed on the 75% THPS concentrate and the information was adjusted to present the data for 35% concentrate equivalent to the concentration of Magnicide.

It should be noted that the durations for all the whole effluent toxicity tests mentioned previously are greater than the proposed 36 hour discharge period. Very little dilution is required to lower the THPS concentration to levels where no adverse effects are observed for the most sensitive species tested. Further, the 24 and 48-hour survival rates experience a tremendous increase with the addition of the hydrogen peroxide.

TRC Environmental Corporation conducted rudimentary dilution modeling using CORMIX-GI, Version 4.03b. The results are included in the September, 2002 supplemental information package. Epsilon Associates Inc., prepared an extensive flow model of the Fore River Estuary for a 1999 draft Environmental Impact Report for a proposed once through cooling water discharge at approximately the same location as the proposed floodwater discharge point. Although the once through cooling water system plans were abandoned in favor of a closed loop system, the extensive flow modeling they provided remains very useful.

The modeling conducted by both TRC and Epsilon demonstrate high rates of dilution. TRC demonstrated that there is little chance that the effluent plume will contact the river bank. The CORMIX model confirmed rapid near field dilution. The Epsilon study demonstrated high flushing rates and short residence times for pollutants within the Fore River.

> *The Weymouth Fore River is dominated by tidal flow. The tides influence both the horizontal and vertical mixing in the estuary, which allows for only limited stratification in the water column during summer months.*
>
> *The estuary turnover time is used to indicate the mean time it takes for tidal flushing to replace the mean low tide volume of the system and is defined as the low tide volume divided by the tidal prism volume times the mean tide period of 12.42 hrs. The residence time is used as a measure of the mean time a particle of water, heat or*

pollutant resides in the system before it is flushed out by tidal flow and is defined as the ratio of mean volume divided by tidal prism volume times the mean tide period. The low tide volume in the Weymouth Fore River is approximately $17x10^6$ m^3. *The volume of water for the mean tidal prism is estimated at* $18x10^6$ m^3 *(BECO, 1990). The turnover time is 11.7 hrs. and the residence time is 17.9 hrs, both of which are relatively short times for an estuary and indicative of good flushing.* Epsilon 1999 Draft EIR for Edgar Station, Section 5.4.1.1.

The draft permit shall include an **instantaneous maximum limit of 4.4 mg/l for THPS** . The permittee is required to sample hourly throughout the discharge using the sampling protocol, permit Attachment A. The permittee will sample during the initial discharge holding tank filling process to establish the untreated flood THPS concentration to determine the appropriate hydrogen peroxide concentration. The treated flood water shall be tested once before discharge to the receiving water to insure that 4.4 mg/l concentration is achieved. The limit is based on the previously stated discharge concentration estimate of 4.4 mg/l THPS after neutralization. This limit is based on Best Professional Judgement (BPJ). In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1) of the CWA to establish effluent limitations on a case-by-case basis using BPJ. The limit is protective of State Water Quality Criteria and Standards as required by 40 CFR §122.44(d).

The THPS test protocol was developed by Rhodia. Rhodia has given permission for the use of the protocol in this permit.

pH - Flood Water and Hydrostatic Test Water

The pH limit range of 6.5 to 8.5 Standard Units is based on the Massachusetts Surface Water Quality Standards, 314 Code of Massachusetts Regulations ("CMR") 4.05(4)(b) for the SB waters at Outfall 001 and CMR 4.05(4)(a) for the SA waters at Outfall 002.

Total Suspended Solids (TSS) - Flood Water and Hydrostatic Test Water

The daily maximum discharge for TSS is 100 mg/l. There are no National Effluent Guidelines (NEG) promulgated for these operations. The NEGs for the Steam Electric Power Generating Point Source Category, however, limit TSS to a maximum daily concentration of 100 mg/l. Additionally, the Multi-Sector General Permit for Industrial Activities (Federal Register/ Vol. 65 No. 210/Monday, October 30, 2000/pages 64766-7), includes a benchmark concentration of 100 mg/l for TSS. The general permit fact sheet states: *The benchmarks are also viewed by EPA as a level that, if below, a facility presents little potential for water quality concern.* This limit is based on Best Professional Judgement (BPJ). In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1) of the CWA to establish effluent limitations on a case-by-case basis using BPJ.

Dissolved Oxygen **(**DO**)** - Flood Water and Hydrostatic Test Water
The draft permit requires effluent monitoring for dissolved oxygen. The permittee proposed

measuring DO in the supplemental application material submission to EPA. The permittee plans to discharge the treated pipe flood water and hydrostatic test water over a splash plate to reaerate it before it reaches the receiving waters.

IV. Monitoring Frequency

The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308(a) of the CWA as required by 40 CFR 122.41 (j), 122.41 (j)(4), (5) and 122.44 and 122.48.

V. Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," 16 U.S.C. § 1802(10). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH, 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

Summary of Essential Fish Habitat (EFH) Designation 10' x 10' Square Coordinates:

Boundary	North	East	South	West
Coordinate	42/ 30.0' N	70/ 50.0' W	42/ 20.0' N	71/ 00.0' W

Square Description (i.e. habitat, landmarks, coastline markers): Waters within the Atlantic Ocean within Massachusetts Bay within the square affecting the following: from Winthrop, MA to Marblehead Neck

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod *(Gadus morhua)*	X	X	X	X
haddock *(Melanogrammus aeglefinus)*	X	X		
pollock *(Pollachius virens)*	X	X	X	X
whiting *(Merluccius bilinearis)*	X	X	X	X
red hake *(Urophycis chuss)*	X	X	X	X
white hake *(Urophycis tenuis)*	X	X	X	X
redfish *(Sebastes fasciatus)*	N/A			
winter flounder *(Pleuronectes americanus)*	X	X	X	X

yellowtail flounder *(Pleuronectes ferruginea)*	X	X	X	X
windowpane flounder *(Scopthalmus aquosus)*	X	X	X	X
American plaice *(Hippoglossoides platessoides)*	X	X	X	X
ocean pout *(Macrozoarces americanus)*	X	X	X	X
Atlantic halibut *(Hippoglossus hippoglossus)*	X	X	X	X
Atlantic sea scallop *(Placopecten magellanicus)*	X	X	X	X
Atlantic sea herring *(Clupea harengus)*		X	X	X
bluefish *(Pomatomus saltatrix)*			X	X
long finned squid *(Loligo pealei)*	N/A	N/A	X	X
short finned squid *(Illex illecebrosus)*	N/A	N/A	X	X
Atlantic butterfish *(Peprilus triacanthus)*	X	X	X	X
Atlantic mackerel *(Scomber scombrus)*	X	X	X	X
summer flounder *(Paralicthys dentatus)*				X
scup *(Stenotomus chrysops)*	N/A	N/A	X	X
black sea bass *(Centropristus striata)*	N/A			
surf clam *(Spisula solidissima)*	N/A	N/A		
ocean quahog *(Artica islandica)*	N/A	N/A		
spiny dogfish *(Squalus acanthias)*	N/A	N/A		
bluefin tuna *(Thunnus thynnus)*			X	X

Summary of Essential Fish Habitat (EFH) Designation for the Weymouth Fore River, Quincy Pt., and Town River Bay

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod *(Gadus morhua)*	X	X	X	X
haddock *(Melanogrammus aeglefinus)*	X	X		
pollock *(Pollachius virens)*	X	X	X	X
whiting *(Merluccius bilinearis)*	X	X	X	X
red hake *(Urophycis chuss)*	X	X	X	X
white hake *(Urophycis tenuis)*	X	X	X	X
redfish *(Sebastes fasciatus)*	N/A			
winter flounder *(Pleuronectes americanus)*	X	X	X	X
yellowtail flounder *(Pleuronectes ferruginea)*	X	X	X	X
windowpane flounder *(Scopthalmus aquosus)*	X	X	X	X
American plaice *(Hippoglossoides platessoides)*	X	X	X	X

ocean pout *(Macrozoarces americanus)*	X	X	X	X
Atlantic halibut *(Hippoglossus hippoglossus)*	X	X	X	X
Atlantic sea scallop *(Placopecten magellanicus)*	X	X	X	X
Atlantic sea herring *(Clupea harengus)*		X	X	X
bluefish *(Pomatomus saltatrix)*			X	X
long finned squid *(Loligo pealei)*	N/A	N/A	X	X
short finned squid *(Illex illecebrosus)*	N/A	N/A	X	X
Atlantic butterfish *(Peprilus triacanthus)*	X	X	X	X
Atlantic mackerel *(Scomber scombrus)*	X	X	X	X
summer flounder *(Paralicthys dentatus)*				X
scup *(Stenotomus chrysops)*	N/A	N/A	X	X
black sea bass *(Centropristus striata)*	N/A		X	X
surf clam *(Spisula solidissima)*	N/A	N/A	X	X
ocean quahog *(Artica islandica)*	N/A	N/A		
spiny dogfish *(Squalus acanthias)*	N/A	N/A		
bluefin tuna *(Thunnus thynnus)*			X	X

The Fore River in the vicinity of the discharges are designated essential fish habitat (EFH) for the above listed species of finfish and mollusks. The effluent limitations and other permit requirements identified in this Fact Sheet are designed to be protective of all aquatic species, including those with designated EFH. EPA has, therefore, determined that a formal EFH consultation with NMFS is not required because the proposed discharge will not adversely impact EFH.

VI. Endangered Species Act Consultation

Section 7(a) of the Endangered Species Act of 1973, as amended (“Act") grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (“listed species") and habitat of such species that has been designated as critical (“critical habitat").

Section 7(a)(2) of the Act requires every Federal agency, in consultation with and with the assistance of the Secretary of the Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or results in the destruction or adverse modification of critical habitat. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species.

The following species are known to inhabit (seasonally) the Massachusetts Bay in the area of the proposed offshore discharge: North Atlantic right whale, humpback whale, fin whale, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, and green sea turtle.

The permittee consulted with the National Marine Fisheries Service during the planning stage of this project to ascertain the optimum time frame for discharge so as to minimize impacts to marine species. The proposed discharge is to an area that offers high immediate dilution. The neutralized biocide treated flood water will display low toxicity, as evidenced by the whole effluent toxicity test data introduced previously. The draft permit should be protective of the most sensitive marine species.

VII. Antidegradation

The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04. All existing uses of the Fore River and Massachusetts Bay must be protected. The EPA anticipates that the MADEP shall make a determination that there shall be no significant adverse impacts to the receiving waters and no loss of existing uses as a result of the reissuance of this permit. The public is invited to participate in the anti-degradation finding through the permit public notice process.

The remaining general and special conditions of the permit are based on the NPDES regulations, 40 CFR Parts 122 through 125, and consist primarily of management requirements common to all permits.

VIII. State Certification Requirements.

EPA may not issue a permit in the Commonwealth of Massachusetts unless the (MADEP) certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the MADEP has reviewed the draft permit. EPA has requested permit certification by the state pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

IX. Comment Period and Procedures for Final Decisions.

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for the arguments in full by the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection (CPE), One Congress Street - Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

X. EPA Contact.

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Douglas M. Corb
U.S. Environmental Protection Agency
Office of Ecosystem Protection
One Congress Street
Suite-1100 - CPE
Boston, MA 02114-2023
Telephone: (617) 918-1565
Facsimile: (617) 918-0565
e-mail: corb.doug@epa.gov

December 23, 2002	Linda Murphy, Director*
Date	Office of Ecosystem Protection
	U.S. Environmental Protection Agency

* Please address comments to Douglas Corb

Attachments not provided electronically