**DRAFT AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§1251 et seq.; the "CWA"),

**EP Newington Energy, L.L.C.**

is authorized to discharge from the facility located at

**EP Newington Energy Facility**
**200 Shattuck Way**
**Newington, NH 03801**

to receiving waters named: **Piscataqua River**
**(USGS Hydrologic Basin Code 01060003)**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on the first day of the calendar month following sixty (60) days after the date of signature.*

This permit supersedes the permit issued on August 15, 2007.

This permit and the authorization to discharge expire at midnight, five (5) years from the last day of the month preceding the effective date.

This permit consists of: 12 pages in Part I which includes effluent limitations, monitoring and reporting requirements and conditions; Attachment A - Marine Acute Toxicity Test Procedure and Protocol (10 pages)(July 2012); as well as 25 pages in Part II which includes General Conditions and Definitions.

Signed this ___ day of September, 2012

_____

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency
Region I - New England
Boston, Massachusetts

* If no comments requesting a change to the draft permit are received, the permit will become effective upon the date of signature.

## PART I A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

**1.** During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall number **001: cooling tower blowdown and low volume waste** [1] to the Piscataqua River. Such discharges shall be limited and monitored by the permittee as specified below.

| Effluent Characteristic | Discharge Limitations | | Monitoring Requirements [2] | |
|---|---|---|---|---|
| | Average Monthly | Maximum Daily | Frequency | Sample Type |
| Flow (million gallons/day – (MGD)) | 4.0 | 4.0 | Continuous | Recorder |
| Minimum Flow Rate (gallons per minute (gpm)) | -- | 451[3] | Continuous | Recorder |
| Salinity (parts per million – (ppm)) | Report | 66,000 | 1/day | Grab |
| Free Available Chlorine (mg/L) [4] | 0.2 [5] | 0.5[6] | 1/day [7] | Grab |
| Total Residual Oxidants (mg/L) [4] | No detectable amount | No detectable amount | 1/day - as required [8] | Grab |
| The 126 priority pollutants contained in chemicals added for cooling tower maintenance (except Cr and Zn) | No detectable amount[9] | No detectable amount[9] | 1/year | Composite |
| Total Recoverable Chromium (mg/L) | 0.2 | 0.2 | 2/month | Composite |
| Total Recoverable Zinc (mg/L) | 1.0 | 1.0 | 2/month | Composite |
| Temperature (°F) | Report | 95 [10] | Continuous | Recorder |
| pH (standard units) | ≥6.5 and ≤9.0[11] | | Continuous | Recorder[11] |
| Whole Effluent Toxicity [12] | | | | |
| LC50 (%) | | ≥50 | 4/year[13] | Composite[14] |
| A-NOAEL (%) | | Report | ″ | ″ |
| Total Residual Oxidants (mg/L) | | Report | ″ | Grab |
| Salinity (ppt) | | Report | ″ | Composite[14] |
| Total Solids (mg/L) | | Report | ″ | ″ |
| Total Suspended Solids (mg/L) | | Report | ″ | ″ |
| Total Organic Carbon (mg/L) | | Report | ″ | ″ |
| Ammonia (mg/L) | | Report | ″ | ″ |
| Total Cadmium (mg/L) | | Report | ″ | ″ |
| Total Copper (mg/L) | | Report | ″ | ″ |
| Total Lead (mg/L) | | Report | ″ | ″ |
| Total Nickel (mg/L) | | Report | ″ | ″ |
| Total Zinc (mg/L) | | Report | ″ | ″ |

[1] Low volume wastes are those waste streams entering outfalls 004 and 005.

[2] Effluent samples shall be taken from the cooling tower basin at the intake side of the recirculation pumps during the discharge of effluent to the Piscataqua River through the diffuser.

[3] For the duration of the permit, the minimum flow limit is 451 gpm during effluent discharge. This is an instantaneous minimum flow limit that the permittee shall not discharge below except for the approximately two (2) minute time period each time that it takes for the pipe section between the outfall and the control valve to drain. Part I.A.12.a of this permit contains conditions necessary to request modification of this requirement.

[4] Neither free available chlorine (FAC) nor total residual oxidants (TRO) may be discharged for more than two hours in any one day unless the facility can demonstrate to the Regional Administrator that the unit in this particular location cannot operate at or below this level of chlorination. The term "Regional Administrator" means the Regional Administrator of Region I of the U.S. Environmental Protection Agency.

[5] This FAC limit is the average of analyses made over a single period of chlorine release (<2 hours); not an average monthly limit.

[6] This FAC limit shall not be exceeded at any time (instantaneous maximum); not a maximum daily limit.

[7] Free available chlorine shall be monitored within the first five minutes of resuming discharge of the cooling tower circulation water after daily chlorination.

[8] If detectable levels of free available chlorine occur in the discharge, total residual oxidants samples shall be taken two (2) hours after the commencement of discharging.

[9] If analysis finds detectable quantities of any of these pollutants, the permittee shall submit, with the appropriate DMR report, documentation explaining the possible cause(s) and action taken by the facility to prevent further exceedances.

[10] The 95°F temperature limit shall not to be exceeded at any time (instantaneous maximum).

[11] pH limits shall not to be exceeded at any time (instantaneous maximum). Report minimum and maximum pH values.

[12] The Whole Effluent Toxicity (WET) test required by this permit is a 48-Hour Static Acute test on effluent samples using two species, Mysid Shrimp (*Americamysis bahia*) and Inland Silverside (*Menidia beryllina*) following the protocol in Attachment A (Marine Acute Toxicity Test Procedure and Protocol dated July 2012).

(a) LC50 (Lethal Concentration 50 Percent) is the concentration of wastewater (effluent) causing mortality to 50 percent (%) of the test organisms. The "50 % or greater limit" is defined as a sample which is composed of 50 % effluent. <u>This limit is considered to be a maximum daily limit</u>.

(b) A-NOAEL (Acute No-Observed-Adverse-Effect Level) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effects (in this case, death) at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect.

(c) All pollutant parameters shall be determined to at least the Minimum Quantification Level shown in Attachment A, page A-8, or as amended.

[13] Whole Effluent Toxicity (WET) samples shall be collected and tests completed four (4) times per year during the calendar periods ending March 31st, June 30th, September 30th, and December 31st. Toxicity test results are to be submitted by the 15th day of the month following the end of the period tested. Part I.A.12.b of this permit contains conditions necessary to request modification of this requirement.

[14] Composite samples shall be taken over the 24 hour period of one calendar day. If the discharge period is less than 24 hours, composite samples shall be taken during all periods of discharge occurring that day.

**2.** During the period beginning on the effective date of the permit and lasting through the expiration date, the permittee is authorized to discharge from outfall number **003: intake screen wash water**.

a. All live fish, shellfish, and other aquatic organisms collected or trapped on the intake screens shall be returned to their natural habitat with minimal stress. All other material, except natural debris (e.g. leaves, grass and twigs), shall be removed from the intake screens and recycled or disposed of in accordance with all existing Federal, State, and/or Local laws and regulations that apply to waste disposal. Such material shall not be returned to the receiving waters.

b. For the duration of the permit, the permittee shall rotate and visually inspect the intake screens of the cooling water intake structure at least every eight hours for dead and live fish when the intake pumps are in operation. A log shall be maintained that documents the screen wash visual inspections. Logs shall be kept on the property of the Station for at least five (5) years. If cameras are used, the permittee shall keep copies of the videotapes for at least one (1) year. Logs and videotapes shall be made available for review by permitting agencies upon request.

c. If the permittee observes on the cooling water intake screens, or estimates, based on temporally-limited observations: 40 or more dead fish within any 8 hour period, the permittee shall:

i. Initiate continuous screen washing;

ii. Report to the Regional Administrator and the Director within 24 hours by telephone. A written confirmation report is to be provided within five business

days. These oral and written reports shall include the species, size ranges, and approximate number and/or weight of organisms involved in the incident. The term "Director" means the Director of the Water Division of the New Hampshire Department of Environmental Services, (NH DES-WD) or their respective designees.

**3.** During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from internal outfall number **004: wastewater from the boiler blowdown sump**. Such discharges shall be limited and monitored by the permittee as specified below.

| **Effluent Characteristic** | **Discharge Limitations** | | **Monitoring Requirements** [1] | |
|---|---|---|---|---|
| | Average Monthly | Maximum Daily | Frequency | Sample Type |
| Flow (gallons per day) | Report | Report | Continuous | Record |
| Total Suspended Solids (mg/L) | 30.0 | 100.0 | 1/month | Composite |
| Oil and Grease (mg/L) | 15.0 | 20.0 | Quarterly | Grab |

[1] Samples shall be collected from a spigot on the discharge line to the cooling tower prior to mixing with other waste streams.

**4.** During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from internal outfall number **005: wastewater from the neutralization sump**. Such discharges shall be limited and monitored by the permittee as specified below.

| **Effluent Characteristic** | **Discharge Limitations** | | **Monitoring Requirements** [1] | |
|---|---|---|---|---|
| | Average Monthly | Maximum Daily | Frequency | Sample Type |
| Flow (gallons per day) | Report | Report | Continuous | Record |
| Total Suspended Solids (mg/L) | 30.0 | 100.0 | 1/month | Composite |
| Oil and Grease (mg/L) | 15.0 | 20.0 | Quarterly | Grab |

[1] Samples shall be collected from a spigot on the discharge line of the sump, located in the pretreatment piping room, prior to mixing with other waste streams in the cooling tower.

**5. Water Quality Requirements**

a. Discharges and water withdrawals shall not either cause a violation of the water quality standards or jeopardize any Class B use of the Piscataqua River.

b. The thermal plumes from the station shall: (a) not block zones of fish passage, (b) not interfere with spawning of indigenous populations, (c) not change the balanced indigenous population of the receiving water, and (d) have minimal contact with surrounding shorelines.

c. The effluent shall not contain metals and/or materials in concentrations or in combinations which are hazardous or toxic to aquatic life or which would impair the uses designated by the classification of the receiving water.

d. Discharges to the Piscataqua River shall be adequately treated to insure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. They shall be adequately treated to insure that the surface waters remain free from pollutants which produce odor, color, taste, or turbidity in the receiving water which is not naturally occurring and would render it unsuitable for its designated uses.

e. Pollutants which are not limited by the permit, but have been specifically disclosed in the last permit application, may be discharged at the frequency and level disclosed in the application, provided that such discharge does not violate sections 307 and 311 of the Act or applicable water quality standards.

**6. Cooling Water Intake Structure Requirements**

a. No change in the location, design or capacity of the present structure can be made without prior approval of the Regional Administrator and the Director.

b. Heated backwash of the intake for biofouling, ice control or any other purpose is prohibited without prior approval of the Regional Administrator and the Director.

c. The intake bays' cross-over sluice gate shall remain open to the maximum extent practicable.

**7. Water Treatment Chemicals**

The permittee may add and/or change chemicals containing pollutants not currently approved for water discharge (See Part I.A.5.e) only (1) if the permittee can demonstrate through testing that each of the 126 priority pollutants in 40 CFR Part 423.15(j)(1) is not detectable in the final discharge (See Part I.A.1.footnote 9) and (2) when the effluent successfully passes an acute toxicity test within 7 days of any changes in the water treatment chemicals and/or their concentrations occurs. The Regional Administrator or the Director may require additional feasibility studies.

**8. Mixing Zone Requirements**

a. The mixing zone is defined as 100 feet upstream (flood tide) and 100 feet downstream (ebb tide) of the discharge diffuser (outfall 001) with a width of 100 feet and a height of 20 feet from the bottom.

b. The mixing zone criteria for the plume are such that at no time shall the temperature of the receiving water outside the mixing zone be raised more than 1°F nor the salinity raised more than 1 part per thousand (ppt). Brief excursions are allowed only during tidal reversal periods (i.e., the period lasting 15 minutes before and 15 minutes after slack tide). The increase in temperature and salinity of the receiving water body shall be determined by comparing the temperature and salinity at the edge of the mixing zone with the water immediately outside the intake structure, unless a more appropriate method is agreed upon by the permittee, the EPA, and the NH DES-WD.

c. Outside the mixing zone, the natural seasonal cycle of the receiving water shall remain unchanged by the discharge, the annual spring and fall temperature and salinity changes shall be gradual, and large day to day temperature and salinity fluctuations shall be avoided.

d. Within the first two years after the permit becomes effective, the permittee shall conduct a mixing zone verification study for temperature and salinity. The design of the study shall incorporate summer neap tide conditions and must be submitted for review by EPA and NH DES.

**9. Discharge Diffuser Requirements**

a. The submerged, offshore, multi-port diffuser shall be maintained when necessary to ensure proper operation. Proper operation means that the plumes from each nozzle will be balanced relative to each other and that they all have unobstructed flow. Maintenance may include dredging in the vicinity of the diffuser, removal of marine growth or other solids on the interior surfaces of the diffuser nozzles or repair and/or replacement of the nozzle structures.

b. Any necessary maintenance dredging must be performed only during the marine construction season authorized by the New Hampshire Fish and Game Department and only after receiving all necessary permits from the DES Wetlands Bureau, U.S. Coast Guard, U.S. Army Corps of Engineers, and any other agency required.

c. To determine if maintenance is necessary, the diffuser shall be inspected by a licensed diver or licensed marine contractor within the first year of issuance of this permit and every third year thereafter. The as-found or pre-maintenance condition of the diffuser nozzles will be documented on videotape. The maintenance performed on any nozzle and the as-left or post-maintenance conditions will be documented in a written report prepared by the diver or marine contractor.

d. Copies of the videotape and written report of the maintenance provided on the diffuser will be submitted to EPA and NH DES-WD within 60 days of each inspection. Where it is determined that additional maintenance will be necessary, the permittee shall provide the proposed scope and schedule for the maintenance to EPA and NH DES-WD within 60 days of the determination. Significant damage shall be repaired by the permittee as soon as practicable to ensure the proper function of the diffusers.

**10. Storm Water Requirements**

The permittee shall maintain storm water coverage under the facility's Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (#NHR05BV42 or as updated).

**11. Other Requirements**

a. There shall be no discharge of polychlorinated biphenyl (PCB) compounds such as those commonly used for transformer fluid. The permittee shall dispose of all known PCB equipment, articles, and wastes in accordance with 40 CFR 761.

b. Water drawn from fuel oil tanks shall not be discharged into the Piscataqua River.

c. Chlorine only may be used as a biocide. No other biocide shall be used without explicit approval from EPA and the Director.

d. There will be no discharge as a result of chemical and nonchemical metal cleaning wastes, including washing of air precipitators, preheaters, boilers, or other types of process equipment.

e. The permittee shall comply with all existing federal, state, and local laws and regulations that apply to the reuse or disposal of solids, such as those which may be removed from maintenance of the cooling towers or water and waste treatment operations and equipment cleaning. At no time shall these solids be discharged to the Piscataqua River.

f. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Regional Administrator as soon as they know or have reason to believe (40 CFR §122.42):

i. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/L) for acrolein

and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

(4) Any other notification level established by the Regional Administrator in accordance with 40 CFR §122.44(f).

ii. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(1) Five hundred micrograms per liter (500 ug/l);

(2) One milligram per liter (1 mg/l) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

(4) Any other notification level established by the Regional Administrator in accordance with 40 CFR §122.44(f).

**12. Possible Permit Requirement Changes**

a. The permittee may submit a written request to the EPA requesting an increase in the maximum time allowed for the discharge pipe to drain after the control valve is closed. This request must be accompanied by a Drain Time Alternatives Report that details all alternatives that were evaluated and reasons these alternatives were not technically and/or economically feasible. The permittee may not increase the discharge pipe drain time as specified in Part I.A.1, footnote 3 of this permit until written notice is received by certified mail from the EPA indicating that the requirement has been changed.

b. The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per year) of required toxicity testing, after completion of a minimum of four (4) consecutive, valid, toxicity tests that demonstrate compliance with the permit limits for whole effluent toxicity. Until written notice is received by certified mail from the EPA indicating that the Whole Effluent Testing requirement has been changed, the permittee is required to continue testing at the frequency specified in this permit.

c. This permit shall be modified, or alternatively, revoked and reissued to comply with any applicable standard or limitation promulgated or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

(1) Contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or

(2) Controls any pollutant not limited by this permit.

d. This permit may be modified, or alternatively, revoked and reissued to incorporate additional testing requirements, including chemical specific limits if any testing result required by this permit indicates that the discharge causes or has reasonable potential to cause or contribute to an exceedance of any State water quality criterion. Results of the analyses required by this permit are considered "New Information" and the permit may be modified as provided in 40 CFR Section 122.62(a)(2).

## B. MONITORING AND REPORTING

**For a period of one year from the effective date of the permit,** the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit,** the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

1. Submittal of Reports Using NetDMR

NetDMR is accessed from: http://www.epa.gov/netdmr. **Within one year of the effective date of this permit**, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt-out request”).

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA or to NH DES.

2. Submittal of NetDMR Opt-Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to the following addresses:

**Attn: NetDMR Coordinator**
**U.S. Environmental Protection Agency**
**Water Technical Unit (OES04-SMR)**
**5 Post Office Square - Suite 100**
**Boston, MA 02109-3912**

And

**Attn: Compliance Supervisor**
**New Hampshire Department of Environmental Services (NH DES)**
**Water Division**
**Wastewater Engineering Bureau**
**P.O. Box 95**
**Concord, New Hampshire 03302-0095**

3. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15$^{th}$ day of the month following the completed reporting period. All reports required under the permit shall be submitted as an attachment to the DMRs. Signed and dated original DMRs and all other reports or notifications required herein or in Part II shall be submitted to the Regional Administrator at the following address:

**U.S. Environmental Protection Agency**
**Water Technical Unit (OES04-SMR)**
**5 Post Office Square - Suite 100**
**Boston, MA 02109-3912**

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following address:

**New Hampshire Department of Environmental Services**
**Water Division**
**Wastewater Engineering Bureau**
**P.O. Box 95**
**Concord, New Hampshire 03302-0095**

Any verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA-New England and to NH DES-WD.

## C. STATE PERMIT CONDITIONS

This NPDES discharge permit is issued by the U.S. Environmental Protection Agency under Federal and State law. Upon final issuance by the EPA, the NH DES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of the permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation.

**ATTACHMENT A**

**MARINE ACUTE**
**TOXICITY TEST PROCEDURE AND PROTOCOL**

## I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **2007.0 - Mysid Shrimp (Americamysis bahia) definitive 48 hour test.**
- **2006.0 - Inland Silverside (Menidia beryllina) definitive 48 hour test.**

Acute toxicity data shall be reported as outlined in Section VIII.

## II. METHODS

The permittee shall use the most recent 40 CFR Part 136 methods. Whole Effluent Toxicity (WET) Test Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/index.cfm#methods

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

## III. SAMPLE COLLECTION

A discharge and receiving water sample shall be collected. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine[1] (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to

[1] For this protocol, total residual chlorine is synonymous with total residual oxidants

sample use for toxicity testing. If performed on site the results should be included on the COC presented to WET laboratory.

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. If dechlorination is necessary, a thiosulfate control consisting of the maximum concentration of thiosulfate used to dechlorinate the sample in the toxicity test control water must also be run in the WET test.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol. Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6$^{o}$ C.

## IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water is found to be, or suspected to be toxic or unreliable, ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is

species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity require ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

*See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.*

## V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA Region 1 requires tests be performed using four replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from fewer replicates. The following tables summarize the accepted Americamysis and Menidia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE MYSID, AMERICAMYSIS BAHIA 48 HOUR TEST**[1]

| | |
|---|---|
| 1. Test type | 48hr Static, non-renewal |
| 2. Salinity | 25ppt ± 10 percent for all dilutions by adding dry ocean salts |
| 3. Temperature ($^oC$) | $20^oC \pm 1^oC$ or $25^oC \pm 1^oC$, temperature must not deviate by more than $3^oC$ during test |
| 4. Light quality | Ambient laboratory illumination |
| 5. Photoperiod | 16 hour light, 8 hour dark |
| 6. Test chamber size | 250 ml (minimum) |
| 7. Test solution volume | 200 ml/replicate (minimum) |
| 8. Age of test organisms | 1-5 days, < 24 hours age range |
| 9. No. Mysids per test chamber | 10 |
| 10. No. of replicate test chambers per treatment | 4 |
| 11. Total no. Mysids per test concentration | 40 |
| 12. Feeding regime | Light feeding using concentrated Artemia naupli while holding prior to initiating the test |
| 13. Aeration [2] | None |
| 14. Dilution water | 5-30 ppt, +/- 10%; Natural seawater, or deionized water mixed with artificial sea salts |
| 15. Dilution factor | ≥ 0.5 |
| 16. Number of dilutions [3] | 5 plus a control. An additional dilution at the permitted effluent concentration (% |

| | |
|---|---|
| | effluent) is required if it is not included in the dilution series. |
| 17. Effect measured | Mortality - no movement of body appendages on gentle prodding |
| 18. Test acceptability | 90% or greater survival of test organisms in control solution |
| 19. Sampling requirements | For on-site tests, samples are used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection. |
| 20. Sample volume required | Minimum 1 liter for effluents and 2 liters for receiving waters |

Footnotes:

[1] Adapted from EPA 821-R-02-012

[2] If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

[3] When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND TOXICITY TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA 48 HOUR TEST[1]**

| | |
|---|---|
| 1. Test Type | 48 hr Static, non-renewal |
| 2. Salinity | 25 ppt $\pm$ 10 % by adding dry ocean salts |
| 3. Temperature | $20^{o}C \pm 1^{o}C$ or $25^{o}C \pm 1^{o}C$, temperature must not deviate by more than $3^{o}C$ during test |
| 4. Light Quality | Ambient laboratory illumination |
| 5. Photoperiod | 16 hr light, 8 hr dark |
| 6. Size of test vessel | 250 mL (minimum) |
| 7. Volume of test solution | 200 mL/replicate (minimum) |
| 8. Age of fish | 9-14 days; 24 hr age range |
| 9. No. fish per chamber | 10 (not to exceed loading limits) |
| 10. No. of replicate test vessels per treatment | 4 |
| 11. Total no. organisms per concentration | 40 |
| 12. Feeding regime | Light feeding using concentrated Artemia nauplii while holding prior to initiating the test |
| 13. Aeration[2] | None |
| 14. Dilution water | 5-32 ppt, +/- 10% ; Natural seawater, or deionized water mixed with artificial sea salts. |
| 15. Dilution factor | $\geq$ 0.5 |
| 16. Number of dilutions[3] | 5 plus a control. An additional dilution at the permitted concentration (% effluent) is required if it is not included in the dilution series. |
| 17. Effect measured | Mortality-no movement on gentle prodding. |

| | |
|---|---|
| 18. Test acceptability | 90% or greater survival of test organisms in control solution. |
| 19. Sampling requirements | For on-site tests, samples must be used within 24 hours of the time they are removed from the sampling device. Off-site test samples must be used within 36 hours of collection. |
| 20. Sample volume required | Minimum 1 liter for effluents and 2 liters for receiving waters. |

Footnotes:

[1] Adapted from EPA 821-R-02-012.

[2] If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks recommended.

[3] When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

V.1. Test Acceptability Criteria

If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.2. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.2.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25s and LC50 values and ≥ two concentration intervals for NOECs or NOAECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

## VI. CHEMICAL ANALYSIS

At the beginning of the static acute test, pH, salinity, and temperature must be measured at the beginning and end of each 24 hour period in each dilution and in the controls. The following chemical analyses shall be performed for each sampling event.

| Parameter | Effluent | Diluent | Minimum Level for effluent[*1] (mg/L) |
|---|---|---|---|
| pH | x | x | --- |
| Salinity | x | x | ppt(o/oo) |
| Total Residual Chlorine [*2] | x | x | 0.02 |
| Total Solids and Suspended Solids | x | x | --- |
| Ammonia | x | x | 0.1 |
| Total Organic Carbon | x | x | 0.5 |
| | | | |
| Total Metals | | | |
| Cd | x | x | 0.0005 |
| Pb | x | x | 0.0005 |
| Cu | x | x | 0.003 |
| Zn | x | x | 0.005 |
| Ni | x | x | 0.005 |

Superscript:

[*1] These are the minimum levels for effluent (fresh water) samples. Tests on diluents (marine waters) shall be conducted using the Part 136 methods that yield the lowest MLs.

[*2] Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

-Method 4500-Cl E  Low Level Amperometric Titration (the preferred method);
-Method 4500-CL G DPD Photometric Method.

## VII.  TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration

An estimate of the concentration of effluent or toxicant that is lethal to 50% of the test organisms during the time prescribed by the test method.

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart in Figure 6 on page 73 of EPA 821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See flow chart in Figure 13 on page 87 of EPA 821-R-02-012.

## VIII.  TOXICITY TEST REPORTING

A report of results must include the following:

- Toxicity Test summary sheet(s) (Attachment F to the DMR Instructions) which includes:
    - Facility name
    - NPDES permit number
    - Outfall number
    - Sample type
    - Sampling method
    - Effluent TRC concentration
    - Dilution water used
    - Receiving water name and sampling location
    - Test type and species
    - Test start date
    - Effluent concentrations tested (%) and permit limit concentration
    - Applicable reference toxicity test date and whether acceptable or not
    - Age, age range and source of test organisms used for testing
    - Results of TAC review for all applicable controls
    - Permit limit and toxicity test results
    - Summary of any test sensitivity and concentration response evaluation that was conducted

Please note: The NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) are available on EPA's website at http://www.epa.gov/NE/enforcementandassistance/dmr.html

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures;
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s);
- Reference toxicity test control charts;
- All sample chemical/physical data generated, including minimum levels (MLs) and analytical methods used;
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis;
- A discussion of any deviations from test conditions; and
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint.

# NPDES PART II STANDARD CONDITIONS
(January, 2007)

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## PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

   The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

   a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

   b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

   c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

   Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

2. Permit Actions

   This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

   The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including "sludge-only facilities"), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or permittee;
(2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).

c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

## PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
(3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. <u>Upset</u>

a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated;
(3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
(4) The permittee complied with any remedial measures required under B.3. above.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

## PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by

imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

## PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
(2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. Anticipated noncompliance. The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. Transfers. This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. Twenty-four hour reporting.

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)

(3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.

h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

## PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

*Applicable standards and limitations* means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

*Application* means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in "approved States", including any approved modifications or revisions.

*Average* means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

*Average monthly discharge limitation* means the highest allowable average of "daily discharges" over a calendar month calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

*Average weekly discharge limitation* means the highest allowable average of "daily discharges" measured during the calendar week divided by the number of "daily discharges" measured during the week.

*Best Management Practices (BMPs)* means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

*Best Professional Judgment (BPJ)* means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

*Coal Pile Runoff* means the rainfall runoff from or through any coal storage pile.

*Composite Sample* means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

*Construction Activities* - The following definitions apply to construction activities:

(a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

(b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.

(c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

(d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

(e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

*Contiguous zone* means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

*Continuous discharge* means a "discharge" which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

*CWA* means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

*Daily Discharge* means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

*Director* normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

*Discharge Monitoring Report Form (DMR)* means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

*Discharge of a pollutant* means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source", or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See "Point Source" definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead

to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any "indirect discharger."

*Effluent limitation* means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States", the waters of the "contiguous zone", or the ocean.

*Effluent limitation guidelines* means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise "effluent limitations".

*EPA* means the United States "Environmental Protection Agency".

*Flow-weighted composite sample* means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

*Grab Sample* – An individual sample collected in a period of less than 15 minutes.

*Hazardous Substance* means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

*Indirect Discharger* means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

*Interference* means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

*Landfill* means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

*Land application unit* means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

*Large and Medium municipal separate storm sewer system* means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

*Maximum daily discharge limitation* means the highest allowable "daily discharge" concentration that occurs only during a normal day (24-hour duration).

*Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO)* is defined as "maximum concentration" or "Instantaneous Maximum Concentration" during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean "a value that shall not be exceeded" during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of "Maximum Daily Discharge" and "Average Daily Discharge" concentrations are specifically limited to the daily (24-hour duration) values.

*Municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

*National Pollutant Discharge Elimination System* means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program".

*New Discharger* means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants";

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source"; and

(d) Which has never received a finally effective NPDES permit for discharges at that "site".

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

*New source* means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants", the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

*NPDES* means "National Pollutant Discharge Elimination System".

*Owner or operator* means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

*Pass through* means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

*Permit* means an authorization, license, or equivalent control document issued by EPA or an "approved" State.

*Person* means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

*Point Source* means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

*Pollutant* means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

*Primary industry category* means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

*Privately owned treatment works* means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a "POTW".

*Process wastewater* means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

*Publicly Owned Treatment Works (POTW)* means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality".

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

*Regional Administrator* means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

*Secondary Industry Category* means any industry which is not a "primary industry category".

*Section 313 water priority chemical* means a chemical or chemical category which:

(1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);

(2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and

(3) satisfies at least one of the following criteria:

(i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
(ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
(iii) are pollutants for which EPA has published acute or chronic water quality criteria.

*Septage* means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

*Sewage Sludge* means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

*Sewage sludge use or disposal practice* means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

*Significant materials* includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

*Significant spills* includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

*Sludge-only facility* means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

*State* means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

*Storm Water* means storm water runoff, snow melt runoff, and surface runoff and drainage.

*Storm water discharge associated with industrial activity* means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

*Time-weighted composite* means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

*Toxic pollutants* means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of "sludge use or disposal practices" any pollutant identified in regulations implementing Section 405(d) of the CWA.

*Treatment works treating domestic sewage* means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a "treatment works treating domestic sewage", where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

*Waste Pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

*Waters of the United States* means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;

(b) All interstate waters, including interstate "wetlands";

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

*Wetlands* means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

*Whole Effluent Toxicity (WET)* means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

*Active sewage sludge unit* is a sewage sludge unit that has not closed.

*Aerobic Digestion* is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

*Agricultural Land* is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

*Agronomic rate* is the whole sludge application rate (dry weight basis) designed:

(1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and

(2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

*Air pollution control device* is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

*Anaerobic digestion* is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

*Annual pollutant loading rate* is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

*Annual whole sludge application rate* is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

*Apply sewage sludge or sewage sludge applied to the land* means land application of sewage sludge.

*Aquifer* is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

*Auxiliary fuel* is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

*Base flood* is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

*Bulk sewage sludge* is sewage sludge that is not sold or given away in a bag or other container for application to the land.

*Contaminate an aquifer* means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

*Class I sludge management facility* is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

*Control efficiency* is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

*Cover* is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

*Cover crop* is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

*Cumulative pollutant loading rate* is the maximum amount of inorganic pollutant that can be applied to an area of land.

*Density of microorganisms* is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

*Dispersion factor* is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

*Displacement* is the relative movement of any two sides of a fault measured in any direction.

*Domestic septage* is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

*Domestic sewage* is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

*Dry weight basis* means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

*Fault* is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

*Feed crops* are crops produced primarily for consumption by animals.

*Fiber crops* are crops such as flax and cotton.

*Final cover* is the last layer of soil or other material placed on a sewage sludge unit at closure.

*Fluidized bed incinerator* is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

*Food crops* are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

*Forest* is a tract of land thick with trees and underbrush.

*Ground water* is water below the land surface in the saturated zone.

*Holocene time* is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

*Hourly average* is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

*Incineration* is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

*Industrial wastewater* is wastewater generated in a commercial or industrial process.

*Land application* is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

*Land with a high potential for public exposure* is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

*Land with low potential for public exposure* is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

*Leachate collection system* is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

*Liner* is soil or synthetic material that has a hydraulic conductivity of $1 \times 10^{-7}$ centimeters per second or less.

*Lower explosive limit for methane gas* is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

*Monthly average (Incineration)* is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

*Monthly average (Land Application)* is the arithmetic mean of all measurements taken during the month.

*Municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

*Other container* is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

*Pasture* is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

*Pathogenic organisms* are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

*Permitting authority* is either EPA or a State with an EPA-approved sludge management program.

*Person* is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

*Person who prepares sewage sludge* is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

*pH* means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

*Place sewage sludge or sewage sludge placed* means disposal of sewage sludge on a surface disposal site.

*Pollutant (as defined in sludge disposal requirements*) is an organic substance, an inorganic substance, a combination or organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis on information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

*Pollutant limit (for sludge disposal requirements)* is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

*Public contact site* is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

*Qualified ground water scientist* is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

*Range land* is open land with indigenous vegetation.

*Reclamation site* is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

*Risk specific concentration* is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

*Runoff* is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

*Seismic impact zone* is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

*Sewage sludge* is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to:, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

*Sewage sludge feed rate* is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

*Sewage sludge incinerator* is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

*Sewage sludge unit* is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

*Sewage sludge unit boundary* is the outermost perimeter of an active sewage sludge unit.

*Specific oxygen uptake rate (SOUR)* is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

*Stack height* is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

*State* is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

*Store or storage of sewage sludge* is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

*Surface disposal site* is an area of land that contains one or more active sewage sludge units.

*Total hydrocarbons* means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

*Total solids* are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

*Treat or treatment of sewage sludge* is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

*Treatment works* is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

*Unstable area* is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

*Unstabilized solids* are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

*Vector attraction* is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

*Volatile solids* is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

*Wet electrostatic precipitator* is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

*Wet scrubber* is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

| | |
|---|---|
| BOD | Five-day biochemical oxygen demand unless otherwise specified |
| CBOD | Carbonaceous BOD |
| CFS | Cubic feet per second |
| COD | Chemical oxygen demand |
| Chlorine | |
| $Cl_2$ | Total residual chlorine |
| TRC | Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.) |

| | |
|---|---|
| TRO | Total residual chlorine in marine waters where halogen compounds are present |
| FAC | Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion) |
| Coliform | |
| Coliform, Fecal | Total fecal coliform bacteria |
| Coliform, Total | Total coliform bacteria |
| Cont. (Continuous) | Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc. |
| Cu. M/day or $M^3$/day | Cubic meters per day |
| DO | Dissolved oxygen |
| kg/day | Kilograms per day |
| lbs/day | Pounds per day |
| mg/l | Milligram(s) per liter |
| ml/l | Milliliters per liter |
| MGD | Million gallons per day |
| Nitrogen | |
| Total N | Total nitrogen |
| $NH_3$-N | Ammonia nitrogen as nitrogen |
| $NO_3$-N | Nitrate as nitrogen |
| $NO_2$-N | Nitrite as nitrogen |
| $NO_3$-$NO_2$ | Combined nitrate and nitrite nitrogen as nitrogen |
| TKN | Total Kjeldahl nitrogen as nitrogen |
| Oil & Grease | Freon extractable material |
| PCB | Polychlorinated biphenyl |
| pH | A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material |
| Surfactant | Surface-active agent |

| | |
|---|---|
| Temp. °C | Temperature in degrees Centigrade |
| Temp. °F | Temperature in degrees Fahrenheit |
| TOC | Total organic carbon |
| Total P | Total phosphorus |
| TSS or NFR | Total suspended solids or total nonfilterable residue |
| Turb. or Turbidity | Turbidity measured by the Nephelometric Method (NTU) |
| ug/l | Microgram(s) per liter |
| WET | "Whole effluent toxicity" is the total effect of an effluent measured directly with a toxicity test. |
| C-NOEC | "Chronic (Long-term Exposure Test) – No Observed Effect Concentration". The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation. |
| A-NOEC | "Acute (Short-term Exposure Test) – No Observed Effect Concentration" (see C-NOEC definition). |
| $LC_{50}$ | $LC_{50}$ is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The $LC_{50}$ = 100% is defined as a sample of undiluted effluent. |
| ZID | Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports. |

**OUNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**NEW ENGLAND REGION**
**5 POST OFFICE SQUARE, SUITE 100**
**BOSTON, MASSACHUSETTS 02109-3912**

# FACT SHEET

## DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NO.: **NH0023361**

PUBLIC COMMENT PERIOD: 7/20/12 – 8/18/12

PUBLIC NOTICE NO.: NH-011-12

NAME AND ADDRESS OF APPLICANT:

**EP Newington Energy, L.L.C.**
**200 Shattuck Way**
**Newington, New Hampshire 03801**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**EP Newington Energy Facility**
**200 Shattuck Way**
**Newington, New Hampshire 03801**

RECEIVING WATER: **Piscataqua River (USGS Hydrologic Basin Code: 01060003)**

CLASSIFICATION: **Class B**

SIC CODE: **4911** NAICS Code(s): **221112**

CURRENT PERMIT ISSUED: **8-15-2007**
EXPIRED: **8-15-2012**
APPLICATION REC: **1-31-2012**

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## 1. Proposed Action, Type of Facility, and Discharge Location

Essential Power (EP) Newington Energy Facility, located in Newington, New Hampshire, is a 525 megawatt (MW) natural gas and #2 fuel oil fired, combined cycle electrical generating facility (referred to hereafter as either Newington Energy, NEF, Facility, or Station). The Station is an "intermediate" facility, having an average yearly capacity utilization rate of 56.8% for 2011.[1] The Station has two, gas-fired combustion turbine generators (CTG) with two corresponding heat recovery steam generators (HRSG) and a condensing steam turbine generator. Commercial operation began in November, 2002. There are also two small package boilers which are used for heat and six natural gas-fired heaters for pre-heating the fuel.

Newington Energy Facility's current National Pollutant Discharge Elimination System (NPDES) Permit allows the withdrawal of cooling water from and the discharge of pollutants to the Piscataqua River. *See* Attachment A-1 showing the intake and discharge locations. A 10-cell mechanical draft cooling tower is used to cool and recirculate non-contact condenser cooling water, thus reducing the amount of water removed from the river compared to once-through cooling systems. NEF is permitted to discharge intake screen wash water and cooling tower wastewater mixed with other internal process wastes. Storm water discharges to the Piscataqua River are covered by the facility's Multi-Sector General Storm Water Permit (NHRO5BV2) issued in 2009.

Under CWA §§ 301(a), 316 and 402, Newington Energy Facility's pollutant discharges and cooling water withdrawals must receive authorization from a National Pollutant Discharge Elimination System (NPDES) permit issued by the U.S. Environmental Protection Agency (EPA, EPA-New England, Region I, the Region). EPA may not issue a permit for NEF unless the New Hampshire Department of Environmental Services (NH DES) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate the New Hampshire Surface Water Quality Regulations (NH-Standards) or waives its right to certify as set forth in 40 CFR §124.53. EPA last issued the Station's federal permit (number NH0023361) on August 15, 2007. This permit expires on August 15, 2012. The permit may be administratively continued, however, because the Station submitted a timely and complete application for permit reissuance. If a renewed permit is not issued by August 15, 2012, the Facility remains subject to the existing permit until EPA issues it a new one.

EPA received Newington Energy's application for reissuance of the Facility's NPDES permit on January 31, 2012. In response to a letter from EPA that delineated deficiencies in the application, supplemental information was received May 1, 2012. Newington Energy requested several alterations to its renewed NPDES permit. The changes requested are discussed in detail further in this Fact Sheet. EPA currently intends to reissue the Facility's NPDES permit. This Draft Permit proposes to continue to authorize the intake of cooling water and discharge of cooling and process water.

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[1] Capacity factors for 2009 and 2010 were 30.3% and 40.5% respectively.

## 2. Description of Discharge

Refer to Section 6.2 of this Fact Sheet for a description of the discharges associated with each outfall location. A schematic drawing of the flow of water at the facility and the various discharges from the facility is presented on Attachment C. Attachment B describes the discharge, based on the applicant's quantitative discharge data.

## 3. Receiving Water Description

Newington Energy Facility withdraws water from and discharges to the lower Piscataqua River. The Piscataqua is a tidal river approximately 13 miles long, which empties into Portsmouth Harbor/ Atlantic Ocean. The tide in this river is semi-diurnal with an average period of 12.4 hours. The lower portion of the Piscataqua River has been characterized as a well mixed estuary. Newington Energy Facility 1998 NPDES Permit Application, TRC, p. 4-5. Tidal flushing requires six to 12 tidal cycles (3 to 6 days) and tidal mixing forces cause the water column to be vertically well mixed.

The Piscataqua River is classified as a Class B water body pursuant to the State of New Hampshire Surface Water Quality Regulations (N.H. Code of Administrative Rules, PART Env-Wq 1703.01) and N.H. RSA 485-A:8. Class B waters are "considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies." (RSA 485-A:8, II)

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 section of the Piscataqua River that NEF discharges into is on the 2010, CWA 303(d) list for polychlorinated biphenyls (PCB's), mercury and dioxin.

## 4. Limitations and Conditions

Proposed effluent discharge limits, cooling water intake and monitoring requirements may be found in Part I (Effluent Limitations and Monitoring Requirements) of the Draft Permit.

## 5. Permit Basis: Statutory and Regulatory Authority

The CWA prohibits the discharge of pollutants from point sources to waters of the United States without authorization from a NPDES permit, unless the CWA specifically exempts a particular type of point source discharge from requiring a permit. The NPDES permit is the mechanism used to apply-technology and water quality-based effluent limitations and other requirements including monitoring and reporting directly to particular facilities. This draft NPDES permit was developed in accordance with the CWA, EPA regulations promulgated thereunder, and any other applicable federal and state legal requirements. The regulations governing the EPA NPDES permit program are generally found at 40 C.F.R. Parts 122, 124, 125, and 136.

When developing permit limits, EPA must apply both technology-based and water quality-based requirements. To the extent that both may apply, whichever is more stringent governs the permit limits. Criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA-promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA, are set out in 40 C.F.R. Part 125, Subpart A. Development of water quality-based permit limits is addressed in, among other provisions, CWA §§ 301(b)(1)(C) and 401, as well as 40 C.F.R. §§ 122.4, 122.44, 124.53 and 124.55.

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA to meet best practicable control technology currently available (BPT) for certain conventional pollutants, best conventional control technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) or new source performance standards (NSPS) for toxic and non-conventional pollutants. The technology-based guidelines for industrial dischargers can be found at 40 CFR Parts 400 - 471 and represent the minimum level of control that must be imposed under section 301(b) and 402 of the CWA. *See* 40 CFR Part 125, Subpart A.

In general, for facilities like Newington Energy, technology-based effluent limitations must be complied with as expeditiously as practicable, but in no case later than either three years after the date such limitations were established or March 31, 1989, whichever comes first. *See* 40 C.F.R. §125.3(a)(2). Since the statutory deadline for meeting any applicable technology-based effluent limits has already passed, NPDES permits must require immediate compliance with any such limits included in the permit.

In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1)(B) of the CWA to establish appropriate technology-based effluent limitations (*e.g.*, BAT limits) on a case-by-case basis using best professional judgment (BPJ). *See* also 40 C.F.R. § 125.3.

Water quality-based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water quality standards. *See* CWA §§ 301(b)(1)(C) and 401. State Water Quality Standards provide a classification for all the water bodies in the state and specify the "designated uses" and numeric and narrative water quality criteria that water bodies in each classification should be able to achieve. The New Hampshire Surface Water Quality Regulations (NH-Standards) include a narrative statement that prohibits the discharge of any pollutant or combination of pollutants in quantities that would be toxic or injurious to human health or aquatic life. In addition, the State has adopted EPA's numerical criteria for specific toxic pollutants and toxicity criteria. State Water Quality Standards also contain antidegradation requirements to ensure that once a use is attained it will not be degraded. Permit limits must then be devised so that discharges and cooling water withdrawals do not cause violations of these Water Quality Standards.

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 criterion. *See* C.F.R. § 122.44(d)(1). An excursion would occur if the projected or actual in-stream concentration exceeds the applicable criterion. In determining "reasonable potential," EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentrations and variability in the effluent and receiving water as determined from the permit application, the permittee's monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (3) the sensitivity of the species to toxicity testing; (4) the known water quality impacts of processes on wastewater; and, where appropriate, (5) the dilution of the effluent that would be provided by the receiving water.

In accordance with State regulations [N.H. Code of Administrative Rules, PART Env-Wq 1705.02], the flow used to calculate permit limits for facilities on rivers or streams is based on a known or estimated value of the annual seven (7) consecutive-day mean low flow at the 10-year recurrence interval (7Q10) for aquatic life and human health (non-carcinogens only) in the receiving water at a point just upstream of the outfall. Since the discharge is to tidal waters, Env-Wq 1705.02(c) requires the use of flow conditions that result in a dilution that is exceeded 99% of the time. The current set of New Hampshire Surface Water Quality Regulations became effective on May 21, 2008.

When using chemical-specific numeric criteria to develop permit limits, both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable in-stream pollutant concentrations, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily or instantaneous maximum limits) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 C.F.R. § 122.44(d)(1) and are implemented under 40 C.F.R. § 122.45(d). In the Draft Permit for Newington Energy Facility, the Region has established, pursuant to 40 C.F.R. § 122.45(d)(1), maximum daily and instantaneous maximum discharge limits for specific pollutants to satisfy Water Quality Standards.

Narrative criteria from the State's Water Quality Standards often provide a basis for limiting toxicity in discharges where: (1) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (2) toxicity cannot be traced to a specific pollutant. *See* 40 C.F.R. § 122.44(d)(1)).

Under CWA § 401, EPA may not issue a NPDES permit unless it first obtains a certification from the state confirming that all water quality standards will be satisfied or the state waives its certification rights. If the state issues a certification with conditions, then the permit must conform to the conditions. *See* 40 C.F.R. §§ 124.53 and 124.55.

The Draft Permit's effluent monitoring requirements have been established under the authority of CWA §§ 308(a) and 402(a)(2) and in accordance with 40 C.F.R. §§ 122.41(j), 122.44(i) and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide continuous, representative information on the levels of regulated materials in the waste water discharge streams. The approved analytical procedures are to be found in 40 C.F.R. Part 136 unless other procedures are explicitly required in the permit.

The CWA's anti-backsliding requirements prohibit a NPDES permit from being renewed, reissued or modified with less stringent limitations or conditions than those contained in the previous permit unless an exception to the anti-backsliding requirements applies. *See* CWA §§ 402(o) and 303(d)(4) and 40 C.F.R. §122.44(l)(1) and (2). EPA's anti-backsliding provisions found at 40 C.F.R. §122.44(l) generally prohibit the relaxation of permit limits, standards, and conditions.

In addition to technology-based and water quality-based requirements, limits for thermal discharges may potentially be based on a variance from such requirements under CWA § 316(a). The permittee has not, however, sought relaxation of those limitations under a § 316(a) variance. For the derivation of the thermal discharge limit, see Section 6.3.1 of this Fact Sheet.

Permit limits on cooling water withdrawals may be imposed in a NPDES permit under CWA § 316(b). These requirements are discussed in further detail in Section 6.4 of this Fact Sheet.

The permit must also satisfy the requirements of the essential fish habitat (EFH) provisions of the 1996 Amendments (PL 104-297) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)) and the Endangered Species Act (ESA). These requirements are discussed further in Section's 7.0 and 8.0 of this Fact Sheet, respectively.

# 6. Explanation of the Permit's Effluent Limitation(s)

## 6.1 Facility Information

Newington Energy Facility is located roughly 1000 feet southwest of the Piscataqua River in Newington, New Hampshire. See Attachment A-2 for a map showing the geographical location of the facility. The station uses natural gas or #2 oil as fuel to generate 525 megawatts (MW) of electric power. This facility is a combined cycle power plant. Combined cycle means that electricity is generated using two methods; the gas cycle and the steam cycle. Both methods are combined for higher efficiency. First, gas is burned in two gas turbines which directly turn generators to create electricity (called combustion turbine generators (CTG)). The hot exhaust gases exiting the gas turbines are used to heat water to produce steam in two corresponding heat recovery steam generators (HRSG's). Natural gas is also used for supplemental firing of the HRSG's. Super-heated steam then powers a condensing steam turbine generator. The turbine exhaust steam is directed to a surface condenser (non-contact) to convert the steam back to water for reuse in the boilers.

The facility uses a fiberglass constructed, 10-cell mechanical draft cooling tower to eliminate waste condenser heat through the process of water evaporation. The facility intakes a maximum design flow of 10.8 million gallons per day (MGD) of water from the Piscataqua River for cooling tower make-up. The cooling tower is equipped with a plume abatement system to prevent the formation of ground-level fog and icing during the winter.

The 30-foot by 70-foot cooling water intake structure (CWIS) is located between 200-255 feet off-shore in the Piscataqua River (depending on the tide). The intake is equipped with two intake bays containing a 5,000 gallons per minute (gpm) variable speed pump in each bay

resulting in a total design capacity of 14.4 MGD. Although the total design flow is 14.4 MGD, the total actual maximum flow is reduced to 10.8 MGD due to pressure changes and friction. Generally, only one pump is used at a time and occasionally two pumps are used. Inside the intake channels is a cross over sluice gate. This gate is normally kept open, which results in lower through screen/approach velocities because of the increase screen area available. The intake bay openings are 5 feet x 6 feet in size and located 4.5 feet below the mean low water level and 5 to 6 feet off the bottom of the river. Each intake bay is equipped with vertically rotating modified Ristroph screens with 1/4 inch x 1/2 inch mesh. The screens are designed to rotate based on pressure differentials. Through-screen velocity has been calculated to be at or below 0.5 feet per second. Email from Alan Douglass, NEF to Sharon DeMeo, EPA, March 1, 2007). Low pressure (15 psi) spray wash is used to remove trapped organisms from the intake screens. These organisms are returned directly to the river (below low tide level) via a covered sluiceway. High pressure spray (60 psi) removes all remaining material from the screens to a dumpster for off-site removal. The dumpster drains back to the intake bays. The spray wash pump capacity is 150 gpm. Therefore, a fraction of that amount is the low pressure wash which is discharged to the river through Outfall 003 when the screens are rotated.[2]

Low volume wastes (as defined in 40 C.F.R. 423.11) are directed to the cooling tower basin (internal Outfall 002) to minimize total water demand and limit wastewater discharge requirements. Low volume wastes include boiler blowdown, treated demineralizer waste, floor drains, vacuum pump seal water, and evaporative cooler blowdown.

Laboratory wastewater is considered low volume waste. However it is removed for off-site disposal. In addition, wastes generated during acid cleaning of the boilers, off-line compressor cleaning (turbine washing) and cleaning of other types of process equipment are hauled for off-site treatment and disposal.

The existing permit prohibits the discharge of **chemical** metal cleaning wastes. However, nonchemical metal cleaning wastes are also not discharged. The Draft Permit corrects the error of not addressing both the chemical and nonchemical metal cleaning wastewater by including a provision that prohibits the discharge of all metal cleaning wastes. EPA has promulgated National Effluent Limitations Guidelines (NELGs) for the "Steam Electric Power Generating Point Source Category," the point source category which applies to Newington Station. *See* 40 C.F.R. Part 423. These NELGs define "metal cleaning wastes" as:

> any wastewater resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

40 C.F.R. § 423.11(d). Additional sources of nonchemical metal cleaning wastes may include the following nonchemical metal process equipment washing operations: SCR catalyst wash, boiler wash, furnace wash, stack and breeching wash, fan wash, precipitator wash, and

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[2] "The screen rotation is automatically controlled with a spray wash every 6 hours or if there is an upstream/downstream wet well differential level indicted [sic]" June 7, 2012 email attachment from Alan Douglass, EP Energy Massachusetts to Sharon DeMeo, EPA.

combustion air heater wash. If EP Newington chose to discharge chemical metal cleaning wastewater, EPA would apply appropriate limits pursuant to 40 C.F.R. § 423.15(d). Furthermore, if EP Newington chose to discharge nonchemical metal cleaning wastewater, EPA would determine on a case-by-case basis what effluent limitations represent the BAT level, using its "best professional judgment" because EPA has "reserved" specification of BAT NELGs for nonchemical metal cleaning waste. *See* 40 C.F.R. 423.15(e). *Also see* 40 C.F.R. § 125.3(c)-(d).

Currently, a maximum 4.0 MGD of heated cooling tower blowdown containing low volume waste is permitted to discharge to the Piscataqua River through a submerged multi-port diffuser (Outfall 001) located approximately 700 feet off-shore (500 feet from the intake structure). The volume difference between the maximum intake flow (10.8 MGD) and the maximum discharge flow (4.0 MGD) is attributed to evaporation in the cooling tower. The cooling tower operates at two cycles of concentration. Generally, "cycles of concentration" is a term that refers to the measure of the degree to which dissolved solids are being concentrated in the circulating cooling water. A schematic drawing of the flow of water at the facility and the various discharges from the facility is presented in Attachment C.

## 6.2 Descriptions of Permitted Outfalls

The table below lists and describes the facility's permitted outfalls and proposed draft permitted outfalls:

**Newington Energy's Outfall Locations**

| Outfall Number/Location | Description |
|---|---|
| **001** - Submerged, off-shore, multi-port diffuser | Cooling tower blowdown including low volume wastes |
| **002** - Internal outfall (discharged to cooling tower from four locations)<br>- *Removed* during last permitting cycle and replaced with 004 and 005 | Low volume waste from boiler blowdown sump, neutralization tank and clean water sump during rain events and condensate line |
| **003** - Intake screen spray wash | Initial low pressure screen wash to return marine life back to the river |
| **004** - Internal outfall (discharges into cooling tower) | Low volume waste from boiler blowdown sump |
| **005** - Internal outfall (discharges into cooling tower) | Low volume waste from neutralization tank |

**Outfall 001**

Outfall 001 consists of a 14" diameter pipe which extends from the basin of the cooling tower to a submerged diffuser 700 feet off-shore in the Piscataqua River. The diffuser is approximately

66 feet in length with six equally spaced 3" diameter openings (a.k.a. ports). The blowdown flow rate from the cooling tower basin generally ranges from 1200 gpm to 2600 gpm.

The effluent discharged through Outfall 001 consists of cooling tower blowdown mixed with internal process wastewater (low volume wastes). See Internal Outfall Locations 004 and 005 below for more information regarding the low volume wastes.

The small volume of water (average 63 gpd) from the condensate system that drains to the cooling tower is not expected to contain pollutants. Therefore EPA determined that it was unnecessary to require sampling of this internal waste stream.

Each evening the discharge valve is closed and the tower is shocked with 13-15 percent sodium hypochlorite (to prevent biofouling) for approximately two to four hours. Periodic sampling and on-site testing is conducted until the free available chlorine level is below detection level. Discharging then resumes. The Station keeps daily logs of testing results.

Samples collected for permit compliance are taken from the cooling tower basin, upstream of the recirculating pumps. Temperature is continuously monitored in the basin and at the discharge side of the recirulating pumps. The higher of the two readings is used to maintain compliance with the permit limit.

The cooling tower is also equipped with a continuous recording pH meter and sulfuric acid feed system. The acid feed system is calibrated to maintain the pH of the circulating water within the allowable range.

**Outfall 003**

Outfall 003 is the fish return sluiceway. The discharge at this location consists only of the intake screen, low-pressure spray wash water and any biomass that is sprayed off the screens. The source of the spray wash water is the intake well.

**Internal Outfalls 004 and 005**

Outfall 004 consists of all low volume waste that enters the boiler blowdown sump. Outfall 005 consists of all water treatment, low volume wastes that enter the neutralization tank. Attachment C is a water balance line diagram that shows the sources of wastewater to each location. During the last permit reissuance, outfall 002 was removed and replaced with two new outfalls, 004 and 005.[3]

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[3] Prior to construction of the facility, the initial permit was developed assuming that all low volume streams would combine before discharging into the cooling tower. However, the effluent collected as Outfall 002 consisted of several internal low volume waste streams and condensate that discharged at separate locations into the cooling tower. The permittee collected samples from each of the following: boiler blowdown sump, “clean water” sump, neutralization tank and condensate line. Total suspended solids (TSS) samples were flow proportionally combined prior to analysis and oil & grease (O&G) samples are analyzed separately but the results were flow proportionately calculated.

The clean water sump discharges to the Town of Newington's publicly owned treatment works (POTW) via the sanitary sewer system. During a rain event, stormwater from a fuel loading area is diverted to an on-site stormwater retention pond if visual inspection shows no sign of oil sheen. If a sheen is detected the stormwater is directed to the "clean water" sump via an oil/water separator.

## 6.3 Derivation of Effluent Limits under the CWA and/or State of New Hampshire Water Quality Standards

### 6.3.1 Outfall Location 001 (Cooling Tower Blowdown/ Low Volume Waste)

**Chlorine**

The Draft Permit limit for free available chlorine is based on the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44. This limit was originally established based on New Source Performance Standards (NSPS) established in the Federal Guidelines for the Steam Electric Power Generating Point Source Category (40 CFR Part 423.15(j)(1)).

Section 423.15(j)(1) limits the maximum and average concentration of free available chlorine discharged in cooling tower blowdown as shown below. The quantity of pollutant (mass limit) is determined by multiplying the flow of cooling tower blowdown by the concentration listed in the table. However, the existing and Draft Permit limits' are expressed as concentration-based limits pursuant to Section 423.15(m).

| Pollutant | Maximum concentration (mg/l) | Average concentration (mg/l) |
|---|---|---|
| Free Available Chlorine | 0.5 | 0.2 |

40 C.F.R. Part 423.15(j)(2) prohibits the discharge of free available chlorine or total residual chlorine (TRC) from any unit for more than two hours in any one day; and, not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate that the units in a particular location cannot operate at or below this level of chlorination.

Newington Energy chlorinates the cooling tower system on most days by "shocking" the system. Each evening, the discharge valve is closed and approximately 50 gallons of 13-15% sodium hypochlorite is added. The cooling system is allowed to recirculate for two to four hours until periodic testing determines that the free available chlorine concentration is below detection. If blowdown (i.e. discharging) must resume before there is no detectable amount of free available chlorine (but within permit limits), Newington Energy must demonstrate that there is no detectable amount of total residual oxidants (TRO) within two hours.[4] TRO testing is required in

[4] Although the plant operates two HRSG's, there is only one steam turbine generator with one corresponding non-contact surface condenser requiring cooling water. Therefore, based on the chlorination method and plant set-up, EPA considers this one unit for the determination of how many

the Draft Permit, as opposed to TRC, because the intake water contains bromides (i.e., saline water). *See* 40 C.F.R. § 423.11(a).

EP Newington Energy has requested that the TRO monitoring requirement be removed from the permit since chlorine is the only biocide used and "the analysis for TRC [or FAC] will demonstrate compliance with the TRO sampling requirement." NPDES Permit Renewal Application, January 2012, Section 2. As explained above, however, the permit does not require TRC monitoring. Free available chlorine (FAC) is tested and limited pursuant to 40 C.F.R. Part 423.15(m). Furthermore, discharging of FAC, within permit limits, is allowed but for no more than two hours. TRO, which is the TRC equivalent in saline water, is limited according to 40 C.F.R. Part 423.15(j)(2); TRO may not be discharged for more than two hours also. Therefore, the Draft Permit requires that if detectable levels of FAC occur in the discharge, TRO samples shall be taken two hours after the commencement of discharging and the TRO limit at that point is no detectable amount. As the company indicated during a phone conversation with Sharon DeMeo on June 15, 2012, TRO sampling has not occurred during the last permit cycle because the cooling towers have not been discharged with detectable levels of FAC.

Regulations for "Steam Electric Power Generation Point Source Category" are found at 40 CFR Part 423. Under the Steam Electric ELGs, the term "maximum concentration" means a limitation not to be exceeded at any time (i.e., "instantaneous maximum").[5] *See* 40 C.F.R. § 423.15(j)(1)). The term "average concentration" means the average of analyses made over a single period of chlorine release which does not exceed two hours. *See* 40 C.F.R. § 423.11(k). These definitions differ from NPDES permit requirements at 40 C.F.R. §122.2 and Part II of the Draft Permit, where "maximum daily discharge" and "daily discharge" concentrations are generally defined to pertain to 24-hour duration average values.

Furthermore, for the Draft Permit, chlorine may be used as a biocide. No other biocide shall be used without written approval from the Regional Administrator and the Director.

**pH**

The initial pH limits determination for the permit issued July 7, 2000, were based on New Hampshire Water Quality Standards which require that the pH be within the range of 6.5 - 8.0 standard units (s.u.). Part I.G of the 2000 permit allowed the permittee to request a relaxation of the permitted pH range as long as the permittee could demonstrate that the discharge would not alter the naturally occurring receiving water pH.

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hours (i.e. two) in one day that Newington Energy may discharge effluent containing free available chlorine (within permitted limits).

[5] The Total Residual Chlorine (TRC) and Free Available Chlorine (FAC) effluent limitations guidelines for steam electric facilities (40 C.F.R. Part 423) are specified as "maximum concentration" and not as "daily maximum" limits. After promulgation of the Steam Electric Guidelines in 1982, EPA was asked to clarify the correct interpretation of the term "maximum concentration". EPA studied this issue and, in 1992, issued guidance in the form of a memorandum to all the Regional Water Management Division Directors. The 1992 guidance explains that the term "maximum concentration", as it applies to TRC, is intended to mean "instantaneous maximum". It is therefore reasonable that the same explanation applies to FAC since the same term is used.

On October 2, 2003, Newington Energy submitted the results of a pH demonstration study to NH DES. The demonstration project indicated that increasing the facility's permitted pH to a maximum of 9.0 s.u. would not significantly alter the naturally occurring receiving water pH. The NH DES responded to the pH limit adjustment study in a letter dated October 7, 2003, stating that it supported adjusting the NPDES permit limit for pH for Outfall 001 to the range 6.5 - 9.0 s.u. By certified letter dated November 25, 2003, from Roger Janson of EPA to Alan Douglass of Con Ed Development, Newington Energy Facility's NPDES permit pH limit for Outfall 001 was changed to a range of 6.5 - 9.0 s.u.

EPA, in consultation with NH DES has determined that the demonstration study is still valid and therefore, the current permit as well as this Draft Permit retains the new pH limited range of 6.5 - 9.0 s.u. The revised range also falls within the allowable range under the New Source Performance Standards established in the Federal Guidelines for the Steam Electric Power Generating Point Source Category (i.e. 6.0 - 9.0 s.u.).

**PCB's**

40 CFR Part 423.15(b) prohibits the discharge of polychlorinated biphenyl (PCB) compounds. Therefore, the Draft Permit contains this prohibition.

**Priority Pollutants**

The Draft Permit limits for 126 priority pollutants[6], including total chromium and zinc, are based on the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44 and on the New Source Performance Standards (NSPS) established in the Federal Guidelines for the Steam Electric Power Generating Point Source Category (40 CFR Part 423.15(j)(1) for cooling tower blowdown). In accordance with the Federal Guidelines, the Draft Permit requires the permittee demonstrate that none of the 126 priority pollutants (except chromium and zinc) are detectable in the cooling tower blowdown.

| **Pollutant** | **Maximum for any 1 day (mg/l)** | **Average of daily values for 30 consecutive days shall not exceed (mg/l)** |
|---|---|---|
| The 126 Priority Pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except: | No detectable amount | No detectable amount |
| Chromium, total | 0.2 | 0.2 |
| Zinc, total | 1.0 | 1.0 |

Section 423.15(j)(3) states that: "At the permitting authority's discretion, instead of the

[6] The 126 priority pollutants (See 40 C.F.R. 423 Appendix A) are those potentially contained in chemicals added for cooling tower maintenance. In this case, since low volume waste streams are directed to the cooling tower, EPA includes these as potential sources of priority pollutants.

monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants in paragraph (j)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136." This provision, currently in the existing permit, has been removed from the Draft Permit.

EPA has found evidence that trace priority pollutants may be found in some chemical products used by Newington Energy.[7] Further, chemicals generally do become concentrated in cooling towers and chemical reactions may occur either between chemicals used or between the source water and chemical additions that may produce priority pollutants above method detection levels.

The existing permit indicates that reliable information supplied by the manufacturer relative to the priority pollutants in a product may be substituted for actual tests. Material Safety Data Sheets (MSDS), however, which are commonly submitted to demonstrate the ingredients of a product, fall short in the following ways: (1) MSDS's mainly provide chemical hazard information and information for safe product handling, and not an all-inclusive list of a chemical's ingredients; (2) MSDS's list constituents down to the 1% concentration level, therefore, some of the unlisted constituents could be priority pollutants in concentrations that would exceed detection levels using 40 CFR 136 methods; and (3) MSDS data does not account for contaminants present in chemicals manufactured, differences in chemical batches, changes in dosing rates, or a switch to another chemical manufacturer.

Results of annual sampling for the 126 priority pollutants include the following:

<u>2007</u>: arsenic= 0.015 mg/L; total-phenol 0.06 mg/L; and zinc within permit limits;

<u>2008</u>: bis(2-ethylhexyl)phthalate= 190 ug/L (The company describes this result as a "likely artifact of the sample collection process … [a]lternative sampling techniques should be used in the future to eliminate sampling procedures as a suspected cause."); antimony= 0.002 mg/L; copper= 0.005 mg/L; lead= 0.0008 mg/L; and thallium= 0.003 mg/L;

<u>2009</u>: bis(2-ethylhexyl)phthalate= 24 ug/L and mercury= 0.011 ug/L;

<u>2010</u>: bis(2-ethylhexyl)phthalate= 16 ug/L and copper= 0.005 mg/L; and

<u>2011</u>: bis(2-ethylhexyl)phthalate= 44 ug/L; copper= 0.004 mg/L; gamma-BHC (PCB)= 0.0027 ug/L; and zinc within permit limits.

Therefore, EPA requires annual testing of the 126 priority pollutants in 40 CFR Part 423.15(j)(1) by the analytical methods in 40 CFR part 136. If analysis finds detectable quantities of any of these pollutants, the permittee is required to submit, with the appropriate DMR report, documentation explaining the possible cause(s) and action taken by the facility to prevent further

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[7] See November 30, 2008 letter from GE Infrastructure to GE Newington, "[w]hile most GE Benz products are not formulated with the listed priority pollutants, results of the limited pure product testing did indicate trace levels were present in some products."

exceedances. *See* Part I.A.1 (footnote 9) of the Draft Permit.

Non-detectable priority pollutants must also be demonstrated when new chemicals are used at the facility. *See* Part I.A.7 of the Draft Permit.

**Salinity**

Originally, the daily discharge salinity limit was 60,000 parts per million (ppm), based on the permit application submitted before the facility was built. The limit was derived from modeling that was conducted using an expected, maximum, ambient salinity level of 30,000 ppm (30 ppt) and with the cooling tower operating at two cycles of concentration. Newington Energy has since determined that the ambient salinity levels can be as high as 33,000 ppm (33 ppt). Therefore, two cycles of concentration in the towers would result in a discharge of 66,000 ppm (66ppt), which is the current permit limit.[8] This limit is retained in the Draft Permit.

The NH DES-Water Division granted a mixing zone in accordance with NH-Standards, Part Env-Wq 1707. The mixing zone extends 100 feet upstream (flood tide) and 100 feet downstream (ebb tide) of the diffuser and has a maximum width of 100 feet and a vertical distribution no more than 20 feet from the bottom. Based on modeling results, the existing permit requires that the salinity concentration outside the mixing zone not exceed 1 part per thousand (ppt) above ambient.

As requested by NH DES and NH F&G, the existing permit required a mixing zone characterization study to verify the modeling results during reasonable worst case conditions in the summer when the facility may have operated at two cycles of concentration. In-stream

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[8] Although the anti-backsliding provision of the CWA prohibits the renewal, reissuance or modification of a NPDES permit with less stringent limits than those in the previous permit (CWA § 402(o)), a specific exemption allows water quality-based effluent limitations to be relaxed if the water body is in attainment for the relevant pollutant, if the water body will meet or exceed the applicable water quality standards under the new limit, and if the revision is consistent with the state's anti-degradation policy (CWA §§ 402(o)(1) and 303(d)(4)(B); *see also* EPA Interim Guidance on Implementation of Section 402(o) Anti-backsliding Rules for Water Quality-Based Permits (1989)). Newington Energy submitted projected salinity increases using the Cornell Mixing Zone Expert System Modeling Package (CORMIX). CORMIX results were submitted by TRC on behalf of Newington Energy on November 30, 2005, January 30, 2006, and December 15, 2006. The results demonstrated that the requested salinity discharge concentration, even with a flow increase from 3.5 MGD to 4.0 MGD, would not increase the salinity at the edge of the mixing zone more than 1 ppt above ambient. For this reason, the New Hampshire Department of Environmental Services (NH DES) concluded that the new limit would be protective and did not object to the increased salinity limit with certain conditions. In the letter dated January 3, 2007, from Jeff Andrews, NH DES to Sharon Zaya, US EPA, NH DES requested that the Draft Permit include: a minimum flow limit; a mixing zone characterization study, and a condition requiring video-taping the diffuser. Likewise, the New Hampshire Fish and Game Department (NH F&G) did not object to the proposed increased limit. *See* letter dated December 26, 2006 from John Nelson, NH F&G to David Schafer, TRC. EPA allowed the increased salinity limit because the increase would not impair existing water quality as measured at the edge of the mixing zone, and the new limit did not violate the state's anti-degradation policy.

sampling was required for temperature at the edges of the mixing zone. The first study was conducted in 2008 and submitted May 7, 2009. The second study was conducted in 2009 and submitted May 30, 2012. No exceedances were recorded during the 2009 study, although there was a loss of the upstream thermistors. NH DES reviewed the reports and considered the small temperature/salinity exceedances that occurred in 2008 as insignificant. NH DES explains that one of the exceedances can be attributed to slack tide conditions and the other to natural river temperature variations during summer ebb tides. Email from Jeff Andrews, NH DES to Douglas Grout, NH F&G, dated June 7, 2012. However, Part I.A.8 of the current permit requires that "**at no time** shall the temperature of the receiving water outside the mixing zone be raised more than 1°F nor the salinity raised more than 1 part per thousand (ppt)." (emphasis added) Therefore, compliance at the edge of the mixing zone is expected during all tidal conditions, including during slack tides. With that said, however, EPA agrees with NH DES that the temperature and salinity exceedances recorded in 2008 are biologically insignificant. Therefore, NH DES has decided that the mixing zone language could be modified to take into account exceedances during slack tide conditions. *See* Part I.A.8.b of the Draft Permit.

Within two years of the permit becoming effective, the Draft Permit requires at least one mixing zone verification study. The design of the study must incorporate summer neap tide conditions and be submitted for review and comment by EPA and NH DES. *See* Part I.A.8.d of the Draft Permit.

**Flow**

During the last permit issuance, Newington Energy requested an increase in the maximum daily discharge flow from 3.5 MGD to 4.0 MGD. The original flow limit was based on design parameters prior to when the plant was built. The company indicated that an increase in flow was needed to conduct a complete cooling tower blowdown. It was determined that similar to the salinity limit increase, the increase in flow would not affect the designated uses of the river and did not violate the state's anti-degradation policy.[9]

The existing permit also included a new minimum flow limit of 0.65 MGD (451 gpm), as requested by NH DES. *See* letter dated January 3, 2007, from Jeff Andrews, NH DES, to Sharon Zaya, US EPA. NH DES explained that the minimum flow limit was "necessary to avoid the situation whereby the negatively buoyant effluent plume is knocked down by the ambient current, which virtually eliminates discharge induced mixing and allows nominal dilution." The existing permit, therefore, requires a minimum flow limit of 451 gpm. EPA has removed the reference to 0.65 MGD because the total volume of wastewater per day is not the concern that NH DES refers to. The concern is addressed by limiting the flow rate. The 451 gpm flow rate is required "except for the approximately two minute time period each time that it takes for the pipe section between the outfall and the control valve to drain" during times of no discharge (ex., when the discharge valve is closed for daily chlorine treatment of the cooling tower). NEF has

[9] Flow in the Piscataqua River is dominated by tidal exchange. The tidal prism of the Piscataqua River Estuary has been estimated to total approximately 25,000 MGD (see Newington Power Facility NPDES Permit Application, July 1998, p 5-5). A discharge flow of 4.0 MGD represents a fraction (0.016 %) of the tidal prism volume.

requested that this time period be increased from two (2) to 10 minutes in order to reduce stress on the equipment, piping, plumbing fittings, etc. In consultation with NH DES, EPA has determined that this request may be granted only after other alternatives have been exhausted. "Some potential alternatives that may be technically and economically feasible might include temporarily adding seawater or municipal water to the effluent pipe as it drains and installation of duckbill valves that will close (and increase the discharge velocity) as the effluent flow is reduced. The added buoyancy of the municipal water, or any fresh water, would help keep the plume off the bottom. Also, it's my understanding that there are duckbill valves available that open and close pneumatically to get better control over discharge velocities." Email from Jeff Andrews, NH DES to Sharon DeMeo, EPA, June 12, 2012. Therefore, the Draft Permit includes a provision allowing the company to submit an Outfall 001 Drain Time Alternatives Report along with a modification request. *See* Part I.A.12.a of the Draft Permit.

**Temperature**

Part Env-Wq 1703.13 of the NH-Standards states that, for Class B waters, temperature shall be in accordance with RSA 485-A:8, II and VIII. RSA 485-A:8II states, in part, that "[a]ny stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class." RSA 485-A:8VIII states that "[i]n prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire [F]ish and [G]ame [D]epartment, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control."

NH-Standards further provide that a mixing zone may be designated to allow exceedences of the water quality standards within a mixing zone as long as water quality standards are attained at the edge of the mixing zone and meet all minimum criteria specified in Env-Wq 1707.02.

The existing permit includes a water quality-based thermal discharge limit that was established based on the application of the NH-Standards' mixing zone regulations. As described for salinity, the mixing zone extends 100 feet upstream (flood tide) and 100 feet downstream (ebb tide) of the diffuser and has a maximum width of 100 feet and a vertical distribution of no more than 20 feet from the bottom. Based on modeling results, the permit requires that the temperature at the edge of the mixing zone not exceed 1°F above ambient river temperature. This is within recommendations of the NH DES, the NH F&G, and EPA's Gold Book[10] criteria for the protection of marine aquatic life from adverse thermal effects.

In establishing this mixing zone, EPA further determined that an end-of-pipe thermal limit of 90°F would not exceed New Hampshire's narrative thermal water quality standard at the edge of the mixing zone. The 90°F limit was chosen based on Newington Energy's original permit application that was submitted before the facility was built. Pre-construction design models estimated that the maximum effluent discharge temperature would be 89°F. Newington Energy

[10] Quality Criteria for Water 1986 [The Gold Book] EPA Number: 440586001 Date of Publication: May, 1987.

explained to EPA and NH DES in a letter dated February 25, 2005, that "...with time the thermal transfer efficiency of the cooling tower decreases, making it harder for Newington Power to meet the 90°F discharge threshold." Therefore, Newington Power requested an increase in the maximum daily effluent discharge temperature limit to 95°F to provide for "the inevitable higher discharge temperatures that will occur as the result of decreased cooling tower thermal transfer efficiency."

EPA allowed the increased temperature limit in the existing permit because the increase would not appreciably interfere with the assigned use of the Piscataqua River, the increase would not violate the original mixing zone requirements, the increase would not impair existing water quality as measured at the edge of the mixing zone, and the increased limit would not violate the state's anti-degradation policy.[11] The 95°F limit continues in the Draft Permit.

In addition, as requested by NH DES and NH F&G, the existing permit required mixing zone characterization studies to verify the modeling results during reasonable worst case conditions in the summer when the facility may have operated at two cycles of concentration. In-stream sampling was required for temperature at the edges of the mixing zone. See discussion about the results of the mixing zone studies and Draft Permit requirements in the salinity section above.

Also as requested by NH DES, the existing permit includes a requirement to inspect and video-tape the diffuser at least once every three years. EP Newington Energy has requested to reduce the frequency of diffuser inspections to once per permit cycle. *See* NPDES Permit Renewal Application, January 2012, Section 2. For reasons discussed below, EPA has determined that inspection of the diffusers should occur at least once every 3 years.

As required by the existing NPDES permit, a 2008 Mixing Zone Characterization Study was performed by the permittee from July 15, 2008 through July 29, 2008. During thermister placement for the study, the dive team observed that the riser for diffuser port 4 was broken flush with the rip-rap armor stone that protects the outfall pipe. Because of this, diffuser port 4 was discharging vertically upward into the water column rather than at a 60° angle to the vertical. The discharge flow between the six ports was observed to be well balanced and not adversely impacting the mixing characteristics of the diffuser in this case. In order to bring the diffusers back to their designed performance standards, the broken diffuser was repaired during a

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[11] Similar to the discussion regarding salinity above, the permit's temperature limit is a water quality-based effluent limit and may be relaxed if the water body is in attainment for the relevant pollutant, if the water body will meet or exceed the applicable water quality standards under the new limit, and if the revision is consistent with the state's anti-degradation policy. CWA §§ 402(o)(1) and 303(d)(4)(B).

CORMIX modeling results demonstrated that the requested temperature increase of 5°F at the end of pipe would still meet the original requirement that there must not be temperatures greater than 1°F above ambient at the edge of the mixing zone. Furthermore, NH DES and NH F&G did not object to the increase in the permits' end-of pipe temperature limit (see letter dated January 3, 2007, from Jeff Andrews, NH DES to Sharon Zaya, US EPA and letter dated December 26, 2006 from John Nelson, NH F&G to David Schafer, TRC).

scheduled facility outage in October of 2008. *See* Newington Power Facility 2008 Mixing Zone Characterization Study, May 7, 2009, p. 2-3.

In 2009, a second required Mixing Zone Characterization Study was conducted from July 17, 2009 through August 5, 2009. During recovery of the thermister strings at the completion of the study, it was discovered that the upstream thermisters were missing. A dive team was subsequently deployed to determine if the floatation buoy had separated from the anchor line leaving the thermisters and anchor at the bottom of the river. Unfortunately, the dive team could not locate the thermisters, floatation buoy, anchor line or anchor. Since the deployment method had successfully worked in the past, it was subsequently concluded that the thermister string might have been dragged from the deployment site because of a vessel strike or subject to vandalism. Newington Power Facility Corrected 2009 Mixing Zone Characterization Study, May 30, 2012, p 3.

These two incidents confirm that the Piscataqua River in the area of the facility contains high energy tides and associated boat traffic which both pose a threat to the six benthic diffuser ports. These incidents support EPA's and NH DES's concern that there is a potential for debris or boating activities to damage the diffuser ports. Damage may reduce the designed mixing properties of the diffuser, thereby reducing available dilution in the receiving stream. In order for the thermal and salinity discharge plume to behave as predicted, the underwater ports should not be damaged to any great extent. EPA and NH DES have determined that an underwater inspection of the diffusers will be required at least once every 3 years, independent of the permit's renewal, in order to determine whether the diffusers have been damaged. Significant damage will be repaired by the permittee as soon as practicable to ensure the proper function of the diffusers. *See* Part I.A.9 of the Draft Permit.

**Whole Effluent Toxicity**

New Hampshire law states that, "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1703.21(a)(1)). The federal NPDES regulations at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity.

EPA's Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the "Gold Book"[12] and State regulations address individual chemicals, whereas, whole effluent toxicity (WET) approaches evaluate interactions between

[12] Quality Criteria for Water 1986, EPA Number: 440586001, May, 1987.

pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additivity" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

The facility uses a variety of water treatment chemicals in the cooling and boiler water systems. It is not practical for EPA to identify and limit every chemical the permittee may use throughout the life of the permit. In addition, limiting individual chemicals does not take into account any possible synergistic effects when these chemicals are combined. Therefore, the Draft Permit requires the facility to successfully pass an acute toxicity test within 7 days if any changes in the water treatment chemicals and/or their concentrations occurs. *See* Section I.A.7 of the Draft Permit.

Results from these tests provide the EPA, the State and the permittee with an estimate of the overall toxic content of its discharge. If toxicity violations are shown, monitoring frequency and testing requirements may be increased in addition to enforcement actions. The permit may also be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements or chemical specific limits.

EP Newington Energy has requested the reduction in frequency of WET testing. *See* NPDES Permit Renewal Application, January 2012, Section 2. The existing permit requires quarterly WET testing and EP Newington Energy suggests quarterly testing for the first year of permit reissuance and semiannual testing thereafter. Although there has been positive WET Test data collected over the past five years, EPA has determined that the Draft Permit maintain quarterly testing with the option to reduce testing provided that four (4) consecutive sampling events show compliance. *See* Attachment B1 of this Fact Sheet for results of WET testing. The permit should not allow an automatic reduction in testing given that one or more of the first four tests may fail. EPA has previously granted reduction in testing to semiannual by letter dated November 4, 2009, to Alan Douglass, Newington Energy, L.L.C. from David Webster, EPA.

The WET sampling frequency in this Draft Permit is four (4) tests per year, using two (2) species: Mysid Shrimp (*Americamysis bahia*) and Inland Silverside (*Menidia beryllina*). Based upon available dilution and in accordance with EPA-New England's Toxicity Policy, an acute limit of LC50 using a sample of 50 percent effluent is maintained in the Draft Permit. LC50 is defined as the concentration of toxicant, or in this case, as percentage of effluent that would be lethal to 50 % of the test organisms during a 48 hour testing period. Therefore, a 50 % limit means that a sample of 50 % effluent shall cause no greater than a 50 % mortality rate in that effluent sample. The Acute- No Observed Adverse-Effect Level (A-NOAEL) monitoring-only requirement is also maintained in the Draft Permit due to the potential presences of water treatment chemicals in the discharge.

This Draft Permit requires reporting of selected parameters determined from the chemical analysis of the WET test's 100 % effluent sample. Specifically, salinity, total residual oxidants, total solids, total suspended solids, total organic carbon, ammonia, and total cadmium, copper, lead, nickel and zinc are to be reported on the appropriate Discharge Monitoring Report (DMR) for entry into EPA's ICIS data base.

EPA-New England does not consider these reporting requirements an unnecessary burden as reporting these constituents is required with the submission of each toxicity testing report. *See* Draft Permit, Attachment A, page A-8.

### 6.3.2 Outfall Location 003 (Intake Screen Spray Wash)

The Draft Permit maintains the existing permit's inspection and impingement-based requirements for this outfall location. pH and temperature monitoring was removed from the permit during the last permit issuance because there is no possible mechanism to change (increase or decrease) either the pH or temperature during the spray wash operation compared to ambient conditions.[13]

EP Newington Energy has requested that the Draft Permit reflect the EPA accepted procedure using cameras to inspect the intake screens. *See* NPDES Permit Renewal Application, January 2012, Section 2. As EPA indicated, the camera surveillance of the screens meets the requirements of the permit. Email from S. DeMeo, EPA to A. Douglass, Con Ed Dev, October 1, 2008. If video cameras are used, the permittee shall keep copies of the videotapes for one year and make them available upon request. *See* Part I.A.2.b of the Draft Permit.

### 6.3.3 Internal Outfall Locations 004 and 005 (Low Volume Waste)

**Total Suspended Solids and Oil & Grease**

The Draft Permit limits for Total Suspended Solids (TSS) and Oil and Grease (O&G) are based on the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44. These limits were originally established based on NSPS established in the Federal Guidelines for the Steam Electric Power Generating Point Source Category (40 CFR Part 423.15(c) for low volume waste source(s)).

Section 423.15(c) limits the maximum and average concentration of TSS and O&G discharged in low volume waste source(s) as shown below. The quantity of pollutant (mass limit) is determined by multiplying the flow of low volume waste source by the concentration listed in the table. However, the existing permit and Draft Permit limits' are expressed as concentration-based limits pursuant to Section 423.15(m). The permit reflects these limits prior to mixing with cooling water in the tower.

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[13] Originally pH and temperature monitoring at this location were based on the capability of the facility to perform heated backwashing as a way to control biofouling and/or ice build-up in the intake structure. However, this design feature was not built into the facility and the spray wash water is pumped directly from the river, via the intake well. It was determined that removing these monitoring requirements did not violate Section 402(o) of the CWA regarding anti-backsliding since the absence of these requirements would not affect the designated uses of the river and would not violate the state's anti-degradation policy.

| Pollutant | Maximum for any 1 day (mg/l) | Average of daily values for 30 consecutive days shall not exceed (mg/l) |
|---|---|---|
| TSS | 100.0 | 30.0 |
| O&G | 20.0 | 15.0 |

EP Newington Energy has requested the removal of O&G sampling requirements based on sampling results since 2007. *See* NPDES Permit Renewal Application, January 2012, Section 2. The existing permit requires monthly O&G testing. Although EPA agrees that O&G may not be a pollutant that is likely seen in the low volume waste sources at Newington Station, the Federal Guidelines for the Steam Electric Power Generating Point Source Category limits O&G. Therefore, this requirement cannot be removed from the Draft Permit. EPA has determined, however, that a reduction in frequency of O&G testing is appropriate. Therefore, the Draft Permit requires quarterly sampling for O&G.

## 6.4 Cooling Water Intake Structure Requirements under CWA § 316(b)

With any NPDES permit issuance or reissuance, EPA is required to evaluate or re-evaluate compliance with applicable standards, including those stated in CWA Section 316(b) regarding cooling water intake structures (CWIS). CWA §316(b) applies if the permit applicant seeks to withdraw cooling water from waters of the United States. To satisfy §316(b) the permit applicant must demonstrate to the satisfaction of the EPA (or, if appropriate, the State) that the location, design, construction, and capacity of the facility's CWIS(s) reflect the best technology available (BTA) for minimizing adverse environmental impacts. Such impacts include death or injury to aquatic organisms by impingement (being pinned against screens or other parts of a CWIS) or entrainment (being drawn into cooling water systems and subjected to thermal, physical or chemical stresses).

EPA has promulgated final §316(b) regulations providing specific technology standard requirements for the following:

1. New power plants and other types of new facilities with CWISs (so-called "Phase I" facilities). 66 Fed. Reg. 65255 (Dec. 18, 2001) (effective date of the regulations is January 17, 2002);
2. A new Existing Facilities Rule ("Phase II") that addresses all electric generating as well as manufacturing facilities with cooling water intake structures was proposed in April, 2011; the Final Rule is expected sometime this year;[14] and
3. New offshore oil and gas extraction facilities that have a design intake flow threshold of greater than 2 million gallons per day ("Phase III" facilities). 71 Fed. Reg. 35006 (June 16, 2006) (effective date is July 17, 2006).

[14] A previous "Phase II" Rule regulated power plants with flows of 50 million gallons per day or more ("Phase II" facilities) 69 Fed, Reg. 41576 (July 9, 2004) (effective date was September 7, 2004). On January 25, 2007, the United States Court of Appeals for the Second Circuit remanded several aspects of the Phase II Rule to EPA. As a result of the remand, EPA suspended the Rule on March 20, 2007.

The Phase II Rule will apply to existing power plants with cooling water intake structures such as Newington Energy (and to existing manufacturing facilities) but has not yet been finalized. In the absence of applicable compliance standards, Section 316(b) permit requirements for existing facilities, such as Newington Energy, continue to be established on a case-by-case, best professional judgment (BPJ) basis. EPA has determined that the present location, design, construction, and capacity of Newington Energy's CWIS reflects the BTA for minimizing adverse environmental impacts for the reasons presented below:

***"Location"***

Newington Energy's CWIS is located in the Piscataqua River, between 200 and 255 feet away from the shoreline (depending on the tide). The constant influence of the incoming and outgoing tides at this location cause the velocity of the river in the vicinity of the CWIS to drop below 0.5 knots (0.8 feet per second (ft/sec)) for only short periods at slack tides. Maximum expected river velocity routinely builds to or exceeds 2.0 knots (3.4 ft/sec) twice during each tidal cycle. *See* Newington Supporting Document, November 30, 2005, Figures 8 through 17. For the great majority of the time, the upstream and downstream forces exerted by the tidal river velocity are much greater than the through-screen velocity of the CWIS, calculated to be at or below 0.5 ft/sec. Fish swimming in the vicinity of the CWIS must contend with these tidally induced river velocities that move across the intake screens. In this high energy estuarine environment, adult and juvenile fish are far less influenced by the relatively small through-screen velocity of the CWIS. In addition, the CWIS is located away from the shoreline, where tidal river velocities are less diminished by shoreline structure. These two features of the location of the Newington Energy CWIS minimize the adverse environmental impacts of fish and invertebrate impingement.

The relatively greater velocity of the river also acts to sweep free floating eggs and larvae of fish and invertebrates past the CWIS for the large majority of any 24 hour cycle. This provides less opportunity for entrainment of these life stages by the intake structure. The location of the CWIS in this high energy tidal river minimizes the adverse environmental impacts of fish and invertebrate entrainment.

***"Design and Construction"***

The CWIS is equipped with two intake bays containing a 5,000 gallons per minute (gpm) variable speed pump in each bay, resulting in a total design capacity of 14.4 MGD. Although the total design flow is 14.4 MGD, the total actual maximum flow is reduced to 10.8 MGD due to pressure changes and friction. Generally, only one pump is used at a time and occasionally two pumps are used. Although the maximum intake flow is approximately 10 MGD, the daily maximum permitted discharge flow is 4.0 MGD. The difference is attributed to evaporation in the cooling tower. Therefore, intake volume will be higher on dry days in the summer for example, when the evaporation rate is high and more makeup water is needed. The rate of evaporation is highest whenever there is a combination of high temperature, low relative humidity and strong winds.

As previously mentioned, the through-screen velocity has been calculated to be at or below 0.5 feet per second (ft/s). Low intake velocity (<0.5 ft/s) has been shown to result in less

impingement and entrainment.[15]

Inside the intake channels is a cross over sluice gate. This gate is normally kept open, which results in lower through screen/approach velocities because of the increase screen area available. The Draft Permit requires that, as part of BTA, the permittee keep the cross-over sluice gate open to the maximum extent practicable.

The intake bay openings are located 5 to 6 feet off the bottom of the river, thereby minimizing the likelihood that crabs, lobsters, flounder or any other primarily benthic organisms will be drawn into the structure. In addition, the intake openings are also 4.5 feet below the mean low water level, reducing impingement of juvenile and adult fish that reside in the upper water column.

Each intake bay is equipped with vertically rotating, 1/4" x 1/2" mesh, modified Ristroph screens. Low pressure (15 psi) spray wash is used to gently remove any trapped organisms from the intake screens. These organisms are returned directly into the river water (even at low tide level) via a covered sluiceway. The sluiceway is covered to prevent predation by seagulls.

The low through screen velocity, the position of the CWIS opening off the bottom, the Ristroph screens and the low pressure spray wash are all components of BTA to minimize the adverse environmental impacts of fish and invertebrate impingement.

***"Capacity"***

Newington uses a 10-cell mechanical draft cooling tower to eliminate waste condenser heat through the process of water evaporation. The facility withdraws water from the Piscataqua River for cooling tower make-up at a maximum design intake flow of 14.4 MGD. This recirculating "closed-cycle" system significantly reduces the amount of river water withdrawn compared to the more traditional "once-through" cooling water systems in operation at most coastal locations; a reduction of nearly 95%.

EPA recognizes that the volume of water withdrawn by a CWIS is approximately related to the potential for impingement and entrainment, all other factors being equal. The flow volume or capacity of a CWIS is a major factor affecting the entrainment of organisms. The closed-cycle system used at Newington Energy is one of the components of BTA to minimize the adverse environmental impacts of fish and invertebrate impingement and entrainment. The facility does not have the capability to switch to open cycle (i.e., "once-through) cooling.

**BTA Determination**

During the last permit issuance, EPA determined that the impingement monitoring conducted at the facility from October 2002 through January 2004 and entrainment monitoring conducted

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[15] EPA considers velocity to be an important factor that can be controlled to minimize adverse environmental impacts at CWIS's. For example, in most cases a velocity threshold of 0.5 ft/s has been identified as protective of most species of fish. *See* 66 FR 65274, December 18, 2001.

from November 2000 through December 2003 supported the position that the location, design, construction and capacity of the CWIS had reduced impingement mortality and entrainment at Newington Energy. The results of impingement and entrainment monitoring are discussed in the EFH and ESA attachments to this Fact Sheet.

EPA considers this evaluation relevant today and has again determined, based on BPJ, that the present location, design, construction and capacity of Newington Energy's cooling water intake structure reflects the BTA for minimizing adverse environmental impacts providing the following:

a. No change in the location, design or capacity of the present structure can be made without prior approval of the Regional Administrator and the Director.

b. Heated backwash of the intake for biofouling, ice control or any other purpose is prohibited without prior approval of the Regional Administrator and the Director.

c. The intake bays' cross-over sluice gate shall remain open to the maximum extent practicable.

These requirements remain as components of BTA in the Draft Permit.

### 6.5 Stormwater Requirements

Storm water discharges to the Piscataqua River are covered by the facility's Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities #NHR05BV42. The Draft Permit requires that the permittee maintain storm water coverage under this permit.

## 7. Essential Fish Habitat

Under the 1996 Amendments (PL 104-297) 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 (NOAA Fisheries) if EPA's actions, or proposed actions that EPA funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b).

EPA believes that the conditions and limitations contained within the Draft Permit adequately protects all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted.

Attachment D provides the complete discussion of EPA's Essential Fish Habitat assessment as it relates to the renewal of Newington Energy Facility's NPDES permit.

## 8. Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) 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 (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of 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 result in the destruction or adverse modification of critical habitat.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, or plants to determine if any listed species might potentially be impacted by the re-issuance of this NPDES permit. The two listed species that have the potential to be present in the vicinity of Newington Energy are the shortnose sturgeon (*Acipenser brevirostrum*) and the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*).

Based the expected distribution of the species, EPA has determined that there are no shortnose sturgeon in the action area and that the reissuance of the permit will have no effect on the species. Therefore, consultation under Section 7 of the ESA with NMFS for shortnose sturgeon is not required.

Based on the analysis of potential impacts to Atlantic sturgeon presented in Attachment E to this Fact Sheet, EPA has determined that impacts to Atlantic sturgeon from the intake and discharge at Newington Energy Facility, if any, will be insignificant or discountable.

Attachment E provides the complete discussion of EPA's Endangered Species Act assessment as it relates to the renewal of Newington Energy Facility's NPDES permit.

## 9. Monitoring and Reporting

The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

The Draft Permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The Draft Permit requires that, no later than one year after the effective date of the permit, the permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt-out request”).

In the interim (until one year from the effective date of the permit), the permittee may either submit monitoring data and other reports to EPA in hard copy form, or report electronically using NetDMR.

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit discharge monitoring reports (DMRs) electronically via a secure Internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR § 122.41 and § 403.12. NetDMR is accessed from the following url: http://www.epa.gov/netdmr. Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

EPA currently conducts free training on the use of NetDMR, and anticipates that the availability of this training will continue to assist permittees with the transition to use of NetDMR. To participate in upcoming trainings, visit http://www.epa.gov/netdmr for contact information for New Hampshire.

The Draft Permit requires the permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA or to NH DES.

The Draft Permit also includes an "opt-out" request process. Permittees who believe they can not use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility would otherwise be required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the permittee must submit DMRs and reports to EPA using NetDMR, unless the permittee submits a renewed opt-out request sixty (60) days prior to expiration of its opt-out, and such a request is approved by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the Draft Permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format. Hard copies of DMRs must be postmarked no later than the 15th day of the month following the completed reporting period.

## 10. Antidegradation

This draft permit is being reissued with some slight changes in permit requirements, including certain changes requested by EP Newington Energy, LLC. EPA has determined that the changes, as described in this Fact Sheet, will not cause lowering of water quality or loss of existing water uses and that no additional antidegradation review is warranted.

## 11. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate State's Surface Water Quality Regulations or waives its right to certify as set forth in 40 CFR §124.53. The NHDES is the certifying authority within the State of New Hampshire.

Upon public noticing of the Draft Permit, EPA is formally requesting that the State's certifying

authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act, Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since certification is provided prior to permit issuance, failure to provide this statement for any condition waives the right to certify or object to any less stringent condition which may be established by EPA during the permit issuance process following public noticing as a result of information received during that noticing. If the State believes that any conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The sludge conditions implementing section 405(d) of the CWA are not subject to the 401 certification requirements.

Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 CFR Part 124.

The New Hampshire Department of Environmental Services, Water Division is the certifying authority. EPA has discussed this Draft Permit with the Staff of the Wastewater Engineering Bureau and expects that the Draft Permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and 124.55.

## 12. Comment Period, Hearing Requests, 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 their arguments in full by the close of the public comment period, to Sharon DeMeo, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch, 5 Post Office Square, Suite 100, Boston, Massachusetts 02109-3912. 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 meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA 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 any public hearings, if such hearings are held, the EPA 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. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

## 13. 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:

**Ms. Sharon DeMeo, Environmental Engineer**
**U.S. Environmental Protection Agency**
**Office of Ecosystem Protection**
**5 Post Office Square, Suite 100 (OEP06-1)**
**Boston, Massachusetts 02109-3912**
**Telephone: (617) 918-1995**
**FAX No.: (617) 918-0995**

**July 2012**
**Date:**

**Stephen S. Perkins, Director**
**Office of Ecosystem Protection**
**U.S. Environmental Protection Agency**

# Attachment A-1: Intake and Discharge Locations

Permit No: NH0023361

Source: [www.maps.google.com](http://www.maps.google.com)

BASE MAP IS A PORTION OF THE FOLLOWING 30' x 60' USGS TOPOGRAPHIC-BATHYMETRIC QUADRANGLE: KITTERY, ME-NH, 1985

0 5,000 10,000

scale in feet

NH

QUADRANGLE LOCATION

***NEWINGTON POWER FACILITY***

REGIONAL MAP

NEWINGTON ENERGY, L.L.C.

FIGURE 1.2-1 | PROJ. NO. 23875

| Outfall 001 Cooling Tower Blowdown, Quarterly Reporting | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Monitoring Period End Date**** | Aluminum | Cadmium | Chromium | Copper | LC50 Menidia | LC50 Mysid | Lead | Nickel | Ammonia - N | TRO | Zinc |
| | mg/L | mg/L | mg/L | mg/L | % | % | mg/L | mg/L | mg/L | mg/L | mg/L |
| | Max | Max | Max | Max | Min | Min | Max | Max | Max | Max | Max |
| 9/30/2007 | 0.64 | 0 | 0.003 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0.1 |
| 12/31/2007 | 1.3 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0.13 | NT | 0.089 |
| 3/31/2008 | 0.23 | 0.001 | 0.015 | 0 | 100 | 100 | 0.003 | 0 | 0 | NT | 0.075 |
| 6/30/2008 | 0.05 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | NT | 0.09 |
| 9/30/2008 | 0.1 | 0 | 0 | 0.005 | 100 | 100 | 0.001 | 0 | 0 | NT | 0.017 |
| 12/31/2008 | 0.2 | 0 | 0 | 0.01 | 100 | 100 | 0.004 | 0 | 0.89 | NT | 0.07 |
| 3/31/2009 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0.16 | NT | 0.005 |
| 6/30/2009 | 0.2 | 0.001 | 0 | 0.024 | 100 | 100 | 0 | 0.056 | 0.1 | NT | 0.02 |
| 9/30/2009 | 0.05 | 0 | 0 | 0.24 | 100 | 100 | 0 | 0.006 | 0 | NT | 0.011 |
| 3/31/2010 | 0.8 | 0 | 0.004 | 0.23 | 100 | 100 | 0.0008 | 0 | 0.15 | 0.25 | 0.02 |
| 6/30/2010 | 0.24 | 0 | 0 | 0.013 | 100 | 100 | 0.001 | 0 | 0 | 0 | 0.019 |
| 9/30/2010 | 0.076 | 0 | 0 | 0.004 | 100 | 100 | 0 | 0 | 0 | 0 | 0.002 |
| 6/30/2011 | 0.17 | 0 | 0 | 0.01 | 100 | 100 | 0 | 0 | 0.11 | 0 | 0.013 |
| 9/30/2011 | 0.086 | 0 | 0 | 0.002 | 100 | 100 | 0 | 0 | 0 | 0 | 0 |
| **Existing Permit Limit** | Report | Report | Report | Report | 50 | 50 | Report | Report | Report | Report | Report |
| Minimum | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 1.3 | 0.001 | 0.015 | 0.24 | 100 | 100 | 0.004 | 0.056 | 0.89 | 0.25 | 0.1 |
| Average | 0.3 | 0 | 0.002 | 0.038 | 100 | 100 | 0.001 | 0.004 | 0.11 | 0 | 0.038 |
| Standard Deviation | 0.4 | 0 | 0.004 | 0.084 | 0 | 0 | 0.001 | 0.015 | 0.23 | 0.1 | 0.037 |
| # of Measurements | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 6 | 14 |
| **# of Exceedances** | N/A | N/A | N/A | N/A | 0 | 0 | N/A | N/A | N/A | 8* | N/A |
| * NT = Not Tested; TRO was NT as required on 8 sampling occasions | | | | | | | | | | | |
| **In a letter dated Nov. 4, 2009, EPA approved a reduction in WET Testing from four times a year to two times a year (during the months of May and August). | | | | | | | | | | | |

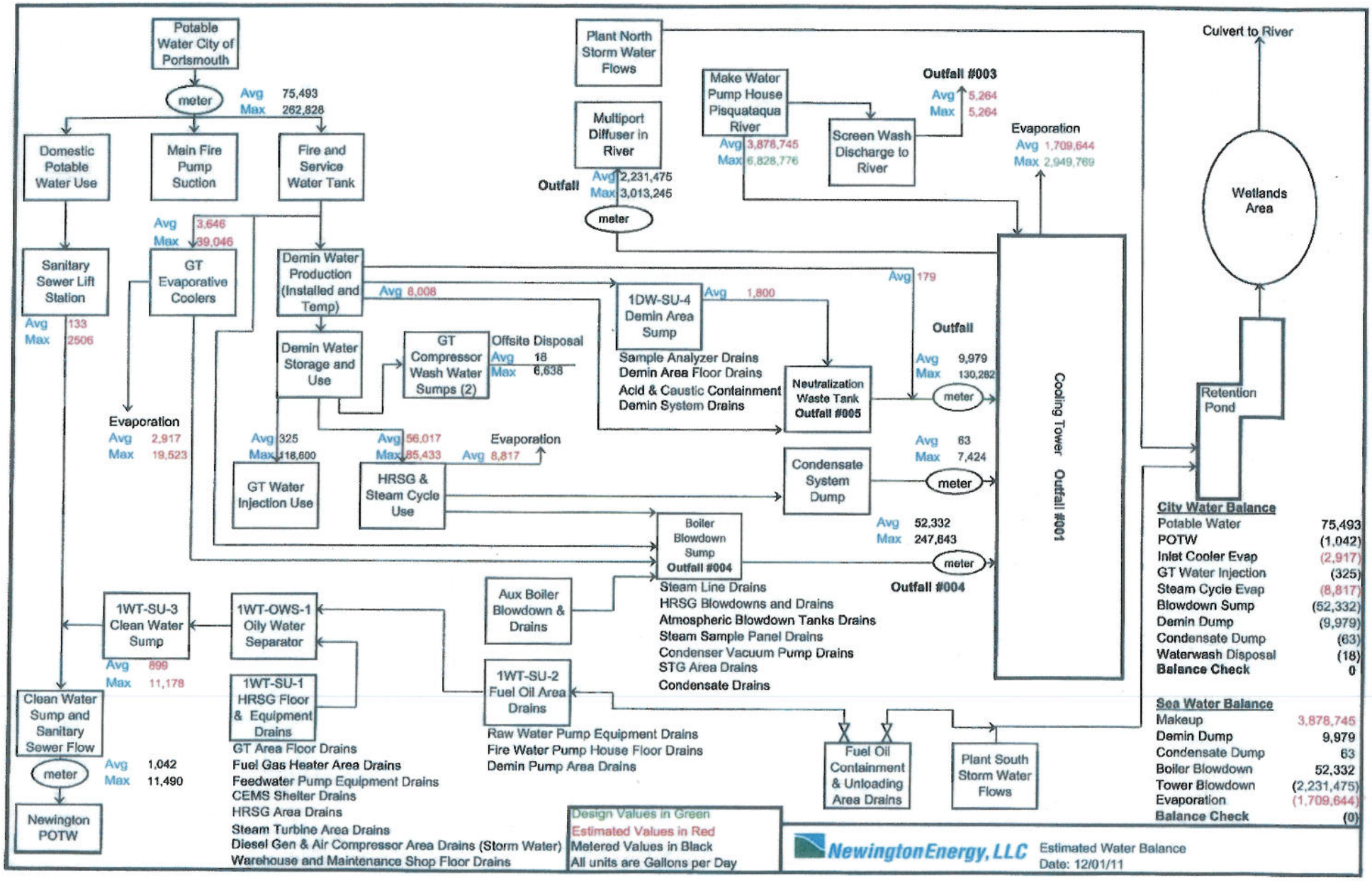
| Outfall 001 Cooling Tower Blowdown, Annual Reporting | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Monitoring Period End Date** | Total Phenol | Arsenic | Antimony | Thallium | Lead | Copper | Mercury | bis(2-ethylhexyl) pthalate | gamma -BHC (PCB) |
| | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | ug/L |
| 12/31/2007 | 0.06 | 0.0015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/31/2008 | 0 | 0 | 0.002 | 0.003 | 0.0008 | 0.005 | 0 | 0 | 0 |
| 12/31/2009 | 0 | 0 | 0 | 0 | 0 | 0 | 0.011 | 24 | 0 |
| 12/31/2010 | 0 | 0 | 0 | 0 | 0 | 0.005 | 0 | 16 | 0 |
| 12/31/2011 | 0 | 0 | 0 | 0 | 0 | 0.004 | 0 | 44 | 0.0027 |
| **Existing Permit Limit** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maximum | 0.06 | 0.0015 | 0.002 | 0.003 | 0.0008 | 1900 | 0.011 | 44 | 0.0027 |
| Average | 0.01 | 0.0003 | 0 | 0.001 | 0.0002 | 380 | 0 | 17 | 0.0005 |
| Standard Deviation | 0.01 | 0.0003 | 0 | 0.001 | 0.0004 | 380 | 0 | 17 | 0.0005 |
| # of Measurements | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| **# of Exceedances** | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 3 | 1 |

| Additional Priority Pollutant Testing, Not Required by Permit, Conducted 12/31/2008 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Monitoring Location** | Thallium | Zinc | bis(2-ethylhexyl) pthalate | Cadmium | Chromium | Copper | Lead | Mercury | Nickel |
| | mg/L | mg/L | ug/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| Outfall 004 | 0.002 | 0.01 | 160 | 0 | 0 | 0 | 0 | 0 | 0 |
| Outfall 005 | 0 | 0.28 | 0 | 0.0006 | 0.009 | 0.009 | 0.001 | 0.028 | 0.01 |

| Outfall 001 Cooling Tower Blowdown, Monthly Reporting | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Monitoring Period End Date** | Chlorine, Free Available (FAC) | | Chromium | | Flow Rate | Total Flow | | pH | | Salinity | | Temperature | | Zinc | | TRO |
| | mg/L | | mg/L | | MGD | MGD | | SU | | ppm | | °F | | mg/L | | mg/L |
| | Daily Max | Monthly Average | Daily Max | Monthly Average | Daily Min | Daily Max | Monthly Average | Min | Daily Max | Daily Max | Monthly Average | Daily Max | Monthly Average | Daily Max | Monthly Average | Daily Max |
| 9/30/2007 | 0 | 0 | 0 | 0 | 1.49 | 3.4 | 2.8 | 7.6 | 7.9 | 52900 | 47606 | 85.9 | 73.4 | 0.091 | 0.088 | NT |
| 10/31/2007 | 0 | 0 | 0 | 0 | 2 | 2.7 | 1.7 | 6.9 | 8 | 55100 | 47286 | 85.7 | 71.6 | 0.085 | 0.081 | NT |
| 11/30/2007 | 0 | 0 | 0 | 0 | 2 | 2.4 | 1.7 | 7.2 | 8 | 51300 | 44958 | 86.6 | 73.8 | 0.076 | 0.07 | NT |
| 12/31/2007 | 0 | 0 | 0 | 0 | 2 | 2.4 | 1.8 | 7.11 | 8.11 | 54800 | 45514 | 90.6 | 76.5 | 0.09 | 0.089 | NT |
| 1/31/2008 | 0 | 0 | 0 | 0 | 2 | 2.4 | 1.7 | 7.4 | 7.9 | 49500 | 42433 | 89.5 | 76.2 | 0.88 | 0.88 | NT |
| 2/29/2008 | 0 | 0 | 0 | 0 | 1.3 | 2.2 | 1.7 | 7.4 | 7.8 | 44400 | 36929 | 90.6 | 74.1 | 0.08 | 0.08 | NT |
| 3/31/2008 | 0 | 0 | 0.02 | 0.005 | 1 | 2.1 | 1.8 | 7.4 | 7.8 | 42300 | 34532 | 87.3 | 74.5 | 0.076 | 0.075 | NT |
| 4/30/2008 | 0 | 0 | 0 | 0 | 1 | 2.2 | 0.5 | 6.8 | 7.9 | 34500 | 23509 | 84.5 | 72.2 | 0.086 | 0.083 | NT |
| 5/31/2008 | 0 | 0 | 0.02 | 0.01 | 1 | 2.61 | 2.07 | 7.5 | 8 | 48100 | 38190 | 86.7 | 74.7 | 0.22 | 0.15 | NT |
| 6/30/2008 | 0 | 0 | 0 | 0 | 1 | 3.3 | 2.2 | 7.6 | 8 | 50600 | 42806 | 88 | 76 | 0.092 | 0.092 | NT |
| 7/31/2008 | 0 | 0 | 0 | 0 | 1 | 3 | 2.4 | 6.6 | 7.9 | 48200 | 43046 | 87 | 78 | 0.01 | 0.01 | NT |
| 8/31/2008 | 0 | 0 | 0 | 0 | 1 | 2.7 | 2.1 | 7.2 | 8 | 45300 | 37225 | 86 | 76 | 0.017 | 0.009 | NT |
| 9/30/2008 | 0 | 0 | 0 | 0 | 1 | 2.8 | 2.1 | 7.6 | 8 | 47200 | 39863 | 87 | 75 | 0.006 | 0.006 | NT |
| 10/31/2008 | 0 | 0 | 0 | 0 | 0.34 | 2.2 | 1.02 | 7.2 | 8 | 46400 | 38005 | 83 | 72 | 0.007 | 0.005 | NT |
| 11/30/2008 | 0 | 0 | 0 | 0 | 1 | 2.3 | 1.8 | 7.3 | 8 | 45000 | 38248 | 81.82 | 70.02 | 0.013 | 0.013 | NT |
| 12/31/2008 | 0 | 0 | 0 | 0 | 1 | 3 | 1.5 | 7.3 | 8 | 46700 | 34040 | 83 | 70 | 0.03 | 0.02 | NT |
| 1/31/2009 | 0 | 0 | 0 | 0 | 1 | 2.6 | 1.7 | 7.2 | 8 | 45500 | 39177 | 87.2 | 67.7 | 0.008 | 0.005 | NT |
| 2/28/2009 | 0 | 0 | 0 | 0 | 1 | 2.1 | 1.7 | 7.3 | 8.1 | 45000 | 41196 | 85 | 69 | 0.008 | 0.007 | NT |
| 3/31/2009 | 0 | 0 | 0 | 0 | 1 | 2.4 | 1.4 | 7.2 | 7.9 | 50200 | 35514 | 86 | 68 | 0.16 | 0.15 | NT |
| 4/30/2009 | 0 | 0 | 0 | 0 | 1 | 2.63 | 1.27 | 7 | 8 | 41700 | 31061 | 91 | 71 | 0.006 | 0.005 | NT |
| 5/31/2009 | 0 | 0 | 0 | 0.002 | 1 | 2.8 | 1.6 | 7.4 | 8 | 46500 | 37556 | 84.7 | 72.3 | 0.02 | 0.012 | NT |
| 6/30/2009 | 0 | 0 | 0 | 0 | 1 | 2.5 | 1.2 | 7.4 | 8 | 47000 | 38058 | 83 | 73 | 0.05 | 0.04 | NT |
| 7/31/2009 | 0 | 0 | 0 | 0 | 1 | 2.68 | 0.95 | 7.4 | 8 | 40800 | 34887 | 86 | 76 | 0.018 | 0.016 | NT |
| 8/31/2009 | 0 | 0 | 0 | 0 | 1 | 2.8 | 1 | 7.5 | 8.1 | 45500 | 40153 | 89.6 | 80.4 | 0.009 | 0.009 | NT |
| 9/30/2009 | 0 | 0 | 0 | 0 | 1 | 2.9 | 0.8 | 7.5 | 8.3 | 48700 | 43100 | 91.5 | 73 | 0.011 | 0.003 | NT |
| 10/31/2009 | 0 | 0 | 0 | 0 | 1 | 0.45 | 0.49 | 7 | 8.2 | 43400 | 33439 | 83.3 | 67.9 | 0.12 | 0.11 | NT |
| 11/30/2009 | 0 | 0 | 0 | 0 | 1 | 1.6 | 0.25 | 7.3 | 8.2 | 41300 | 34728 | 78.6 | 67.6 | 0.007 | 0 | NT |
| 12/31/2009 | 0 | 0 | 0 | 0 | 1 | 2.5 | 1.5 | 6.8 | 8.2 | 40400 | 36403 | 86.2 | 68.3 | 0 | 0 | NT |
| 1/31/2010 | 0 | 0 | 0 | 0 | 1 | 2.2 | 1.1 | 7.39 | 8 | 41900 | 37358 | 85 | 66 | 0.01 | 0.01 | NT |
| 2/28/2010 | 0 | 0 | 0 | 0 | 1 | 2.2 | 0.9 | 7.5 | 8 | 42100 | 37986 | 83 | 67 | 0.018 | 0.015 | NT |
| 3/31/2010 | 0 | 0 | 0 | 0.003 | 1 | 1.9 | 0.16 | 7.6 | 8.1 | 37900 | 31875 | 87 | 71 | 0.01 | 0.02 | NT |
| 4/30/2010 | 0 | 0 | 0 | 0.004 | 1 | 1.9 | 0.1 | 7.6 | 8.1 | 38600 | 31182 | 83.3 | 70.5 | 0.01 | 0.01 | NT |
| 5/31/2010 | 0 | 0 | 0 | 0 | 1 | 2.5 | 1.4 | 7.6 | 8.1 | 47000 | 47837 | 88.7 | 73 | 0.023 | 0.021 | NT |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6/30/2010 | 0 | 0 | 0 | 0 | 1 | 2.74 | 1.98 | 7.7 | 8.2 | 47600 | 38290 | 89.1 | 76 | 0.04 | 0.03 | NT |
| 7/31/2010 | 0 | 0 | 0 | 0 | 1 | 3.2 | 2.2 | 7.3 | 8.1 | 50700 | 46406 | 91.6 | 80.2 | 0.015 | 0.015 | NT |
| 8/31/2010 | 0 | 0 | 0 | 0 | 1 | 3.3 | 2.7 | 7.3 | 8.1 | 50300 | 47393 | 88.2 | 77.8 | 0.004 | 0.002 | NT |
| 9/30/2010 | 0 | 0 | 0 | 0 | 1 | 3.35 | 2.98 | 7.3 | 8.1 | 51200 | 47816 | 88 | 76 | 0.004 | 0.004 | NT |
| 10/31/2010 | 0 | 0 | 0 | 0 | 1 | 3.1 | 0.87 | 6.63 | 8.13 | 45800 | 40100 | 84.3 | 68.6 | 0.005 | 0.005 | NT |
| 11/30/2010 | 0 | 0 | 0 | 0 | 1 | 3 | 2.2 | 6.8 | 8 | 52400 | 42160 | 80.5 | 67.8 | 0.005 | 0.005 | NT |
| 12/31/2010 | 0 | 0 | 0 | 0 | 1 | 2.5 | 1.7 | 7.1 | 8 | 48500 | 41142 | 85.3 | 67.5 | 0.008 | 0.007 | NT |
| 1/31/2011 | 0 | 0 | 0 | 0 | 1 | 2.1 | 1.6 | 6.8 | 8.1 | 41400 | 39353 | 84.8 | 67.4 | 0.012 | 0.01 | NT |
| 2/28/2011 | 0 | 0 | 0 | 0 | 1 | 2.3 | 1.9 | 7.2 | 8.1 | 42560 | 40037 | 83.4 | 68 | 0.009 | 0.009 | NT |
| 3/31/2011 | 0 | 0 | 0 | 0 | 1 | 2.3 | 1.5 | 7.3 | 8.2 | 43300 | 32372 | 86 | 68 | 0.016 | 0.012 | NT |
| 4/30/2011 | 0 | 0 | 0 | 0 | 1 | 2.8 | 1.8 | 7.6 | 8.03 | 42400 | 36562 | 84.2 | 68.9 | 0.008 | 0.006 | NT |
| 5/31/2011 | 0 | 0 | 0 | 0 | 1 | 2.4 | 1.4 | 7.1 | 7.9 | 43500 | 35587 | 84 | 72 | 0 | 0 | NT |
| 6/30/2011 | 0 | 0 | 0 | 0 | 1 | 3.14 | 2.07 | 7.3 | 8 | 47500 | 41771 | 87.2 | 75.2 | 0 | 0 | NT |
| 7/31/2011 | 0 | 0 | 0 | 0 | 1 | 3.3 | 2.5 | 7.3 | 8 | 56300 | 46595 | 90.9 | 80.5 | 0.007 | 0.007 | NT |
| 8/31/2011 | 0 | 0 | 0 | 0 | 1 | 3.2 | 2.4 | 7.5 | 7.9 | 56880 | 43984 | 90 | 79 | 0 | 0 | NT |
| 9/30/2011 | 0 | 0 | 0 | 0 | 1 | 3.1 | 2.4 | 7.2 | 8 | 59070 | 46 | 88.2 | 77.9 | 0 | 0 | NT |
| 10/31/2011 | 0 | 0 | 0 | 0 | 1 | 3 | 1.1 | 7.2 | 8 | 51950 | 35848 | 86.2 | 70.7 | 0.005 | 0.005 | NT |
| 11/30/2011 | 0 | 0 | 0 | 0 | 1 | 2.1 | 1.6 | 7.3 | 8 | 43600 | 40181 | 87 | 71 | 0.004 | 0.003 | NT |
| 12/31/2011 | 0 | 0 | 0 | 0 | 1 | 1.8 | 1.3 | 6.9 | 8 | 47600 | 38.965 | 91 | 70 | 0 | 0 | NT |
| 1/31/2012 | 0 | 0 | 0 | 0 | 1 | 1.7 | 1.5 | 7.5 | 7.9 | 48500 | 39432 | 90.4 | 70.1 | 0.003 | 0 | NT |
| 2/29/2012 | 0 | 0 | 0 | 0 | 1 | 2.1 | 1.6 | 7.4 | 7.8 | 38300 | 36048 | 90.4 | 69.6 | 0 | 0 | NT |
| 3/31/2012 | 0 | 0 | 0 | 0 | 1 | 2.1 | 1.5 | 6.9 | 7.9 | 47810 | 33090 | 90.4 | 70 | 0 | 0 | NT |
| **Existing Permit Limit** | 0.5 | 0.2 | 0.2 | 0.2 | 0.65 | 4 | 4 | 6.5 | 9 | 66000 | Report | 95 | Report | 1 | 1 | 0 |
| Minimum | 0 | 0 | 0 | 0 | 0.34 | 0.45 | 0.1 | 6.6 | 7.8 | 34500 | 38.965 | 78.6 | 66 | 0 | 0 | N/A |
| Maximum | 0 | 0 | 0.02 | 0.01 | 2 | 3.4 | 2.98 | 7.7 | 8.3 | 59070 | 47837 | 91.6 | 80.5 | 0.88 | 0.88 | N/A |
| Average | 0 | 0 | 0 | 0 | 1 | 2.5 | 1.6 | 7.3 | 8 | 46599 | 37635.5 | 86.6 | 72.3 | 0.0453 | 0.042 | N/A |
| Standard Deviation | 0 | 0 | 0 | 0.002 | 0.3 | 0.5 | 0.6 | 0.3 | 0.1 | 5063.9 | 8909.3 | 2.9781 | 3.9 | 0.1229 | 0.121 | N/A |
| # of Measurements | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 0 |
| **# of Exceedances** | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: NT = Not Tested. Total Reduced Oxidants (TRO) were never tested during this time period because the test is only applicable when FAC is present in the discharge.


Potable Water City of Portsmouth
meter
Avg 75,493
Max 262,828
Domestic Potable Water Use
Main Fire Pump Suction
Fire and Service Water Tank
Sanitary Sewer Lift Station
Avg 133
Max 2506
Avg 3,646
Max 39,046
GT Evaporative Coolers
Demin Water Production (Installed and Temp)
Avg 8,008
Demin Water Storage and Use
GT Compressor Wash Water Sumps (2)
Offsite Disposal
Avg 18
Max 6,638
Evaporation
Avg 2,917
Max 19,523
Avg 325
Max 116,600
GT Water Injection Use
Avg 56,017
Max 85,433
HRSG & Steam Cycle Use
Evaporation
Avg 8,817
Plant North Storm Water Flows
Multiport Diffuser in River
Outfall
Avg 2,231,475
Max 3,013,245
meter
Make Water Pump House Pisquataqua River
Avg 3,878,745
Max 6,828,776
Screen Wash Discharge to River
Outfall #003
Avg 5,264
Max 5,264
Evaporation
Avg 1,709,644
Max 2,949,769
Culvert to River
Wetlands Area
1DW-SU-4 Demin Area Sump
Avg 1,800
Sample Analyzer Drains
Demin Area Floor Drains
Acid & Caustic Containment
Demin System Drains
Neutralization Waste Tank Outfall #005
Avg 179
Outfall
Avg 9,979
Max 130,282
meter
Condensate System Dump
Avg 63
Max 7,424
meter
Boiler Blowdown Sump Outfall #004
Avg 52,332
Max 247,643
meter
Outfall #004
Steam Line Drains
HRSG Blowdowns and Drains
Atmospheric Blowdown Tanks Drains
Steam Sample Panel Drains
Condenser Vacuum Pump Drains
STG Area Drains
Condensate Drains
Aux Boiler Blowdown & Drains
Cooling Tower Outfall #001
Retention Pond
City Water Balance
Potable Water 75,493
POTW (1,042)
Inlet Cooler Evap (2,917)
GT Water Injection (325)
Steam Cycle Evap (8,817)
Blowdown Sump (52,332)
Demin Dump (9,979)
Condensate Dump (63)
Waterwash Disposal (18)
Balance Check 0
1WT-SU-3 Clean Water Sump
Avg 899
Max 11,178
1WT-OWS-1 Oily Water Separator
1WT-SU-1 HRSG Floor & Equipment Drains
GT Area Floor Drains
Fuel Gas Heater Area Drains
Feedwater Pump Equipment Drains
CEMS Shelter Drains
HRSG Area Drains
Steam Turbine Area Drains
Diesel Gen & Air Compressor Area Drains (Storm Water)
Warehouse and Maintenance Shop Floor Drains
1WT-SU-2 Fuel Oil Area Drains
Raw Water Pump Equipment Drains
Fire Water Pump House Floor Drains
Demin Pump Area Drains
Clean Water Sump and Sanitary Sewer Flow
meter
Avg 1,042
Max 11,490
Newington POTW
Fuel Oil Containment & Unloading Area Drains
Plant South Storm Water Flows
Sea Water Balance
Makeup 3,878,745
Demin Dump 9,979
Condensate Dump 63
Boiler Blowdown 52,332
Tower Blowdown (2,231,475)
Evaporation (1,709,644)
Balance Check (0)
Design Values in Green
Estimated Values in Red
Metered Values in Black
All units are Gallons per Day
NewingtonEnergy, LLC
Estimated Water Balance
Date: 12/01/11

# Attachment D – Essential Fish Habitat Assessment

Under the 1996 Amendments (PL 104-297) 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 (NOAA Fisheries) if EPA's actions, or proposed actions that EPA 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, "... those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. § 1802(10). Adverse effect 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.

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

The Piscataqua River is high value habitat for a variety of marine and estuarine species, and serves as the only conduit between the Gulf of Maine and Great Bay Estuary. While some fish species permanently reside in the river, most use it to either access spawning or nursery habitats in the Great Bay Estuary and associated rivers, or to migrate from these areas to marine habitats in the Gulf of Maine and beyond. Still others are seasonally present, preying on the concentrated but temporal influx of migrating forage species. Table 2 lists the EFH fish species located in the vicinity of Newington Energy (NMFS Habitat Division).

As the federal agency charged with authorizing the discharge from this facility, EPA consulted with NOAA Fisheries during the initial NPDES permit action related to this facility, under section 305 (b)(2) of the Magnuson-Stevens Act for EFH. *See* March 8, 2000 letter to NOAA Fisheries and their March 17, 2000 response in permit file. As part of the renewal of the NPDES permit for this facility, EPA will submit the Draft Permit and the Fact Sheet to NOAA Fisheries Habitat Division to satisfy EPA's notification responsibility regarding EFH.

**EFH Species Located in the Vicinity of Newington Energy**

| Species | Eggs | Larvae | Juveniles | Adults | Spawning Adults |
|---|---|---|---|---|---|
| Atlantic salmon *(Salmo salar)* | | | F,M | | |
| Atlantic cod *(Gadus morhua)* | S | S | | | |
| haddock *(Melanogrammus aeglefinus)* | S | S | | | |
| pollock *(Pollachius virens)* | S | S | S | | |
| whiting *(Merluccius bilinearis)* | | | | | |
| offshore hake *(Merluccius albidus)* | | | | | |
| red hake *(Urophycis chuss)* | | | S | S | |
| white hake *(Urophycis tenuis)* | S | | S | S | |
| redfish *(Sebastes fasciatus)* | n/a | | | | |
| witch flounder *(Glyptocephalus cynoglossus)* | | | | | |
| winter flounder *(Pleuronectes americanus)* | M,S | M,S | M,S | M,S | M,S |
| yellowtail flounder *(Pleuronectes ferruginea)* | S | S | | | |
| windowpane flounder *(Scopthalmus aquosus)* | S | S | S | S | S |
| American plaice *(Hippoglossoides platessoides)* | | | | | |
| ocean pout *(Macrozoarces americanus)* | | | | | |
| Atlantic halibut *(Hippoglossus hippoglossus)* | S | S | S | S | S |
| Atlantic sea herring *(Clupea harengus)* | | M,S | M,S | | |
| monkfish *(Lophius americanus)* | | | | | |
| bluefish *(Pomatomus saltatrix)* | | | M,S | M,S | |
| long finned squid *(Loligo pealei)* | n/a | n/a | | | |
| short finned squid *(Illex illecebrosus)* | n/a | n/a | | | |
| Atlantic butterfish *(Peprilus triacanthus)* | | | | | |
| Atlantic mackerel *(Scomber scombrus)* | M,S | M,S | S | | |

| | | | | | |
|---|---|---|---|---|---|
| summer flounder *(Paralicthys dentatus)* | | | | | |
| scup *(Stenotomus chrysops)* | | | | | |
| black sea bass *(Centropristus striata)* | | | | | |
| spiny dogfish *(Squalus acanthias)* | n/a | n/a | | | |
| tilefish *(Lopholatilus chamaeleonticeps)* | | | | | |

S = The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity > or = 25.0%).

M = The EFH designation for this species includes the mixing water/ brackish salinity zone of this bay or estuary (0.5% < salinity < 25.0%).

F = The EFH designation for this species includes the tidal freshwater salinity zone of this bay or estuary (0.0% < or = salinity < or = 0.5%).

n/a = These species do not have this lifestage in its life history (dogfish/ redfish), or has no EFH designation for this lifestage (squids). With regard to the squids, juvenile corresponds with pre-recruits, and adult corresponds with recruits in these species' life histories.

These EFH designations of estuaries and embayments are based on the NOAA Estuarine Living Marine Resources (ELMR) program (Jury et al. 1994; Stone et al. 1994).

The Newington Energy Facility, like all facilities that utilize a natural waterbody for cooling purposes, can impact aquatic resources in three major ways: (A) by the entrainment of small organisms into and through the cooling water system; (B) by the impingement of larger organisms on the intake screens; and (C) by creating adverse conditions in the receiving waters from the discharge of heated effluent. The following discusses these three possibilities.

### Entrainment

The potential to impact aquatic organisms by entrainment largely depends on the presence and abundance of organisms that are vulnerable to entrainment, and the flow required for cooling. The EFH resources (including forage species) most vulnerable to entrainment in the vicinity of this proposed facility are species that have positively buoyant eggs, and/or pelagic larvae. Other important considerations include the location and design of the intake structure. According to section 316(b) of the Clean Water Act, any point source that uses a cooling water intake structure must ensure that its location, design, construction, and capacity reflects the best technology available (BTA) for minimizing adverse environmental impact.

Ichthyoplankton studies were conducted to estimate entrainment at Newington Energy as part of a previous permit action. Sampling for fish eggs and larvae was one phase of the pre- and post-operational biological monitoring program. Pre-operational sampling was conducted twice per month from November 2000 through September 2002 and post-operational sampling was completed twice per month from October 2002 through December 2003, following the methods documented in the data summary and analysis report (Ichthyoplankton Studies for the Newington Power Facility 2001 - 2003, MRI/TRC, September 2004).

> Tautog/cunner (the labrids) represented the majority of fish eggs collected over the 2001 - 2003 period, making up 77 - 96 percent, of all eggs found depending upon the year. Other common egg species, in order of numerical importance, included the hakes, Atlantic mackerel, early stage rockling and hake eggs, silver hake, and fourbeard rockling. Cunner made up the majority of the fish larvae collected in the 2001 - 2003 River and Harbor samples. Other common larvae include Atlantic herring, fourbeard rockling, sand lance, rock gunnel, silver hake, grubby, shorthorn sculpin, radiated shanny, hake, Atlantic mackerel, and the seasnail. (MRI/TRC, September 2004)

A detailed discussion of the entrainment estimates can be found in Section 6.4.1 of the 2007 Fact Sheet. Calculated entrainment losses, based on three years of ichthyoplankton collection in the vicinity of Newington Energy, were calculated to be between 0.008% and 0.1% of the locally available source pool (MRI/TRC, September 2004). The annual loss associated with entrainment of eggs and larvae, when converted to equivalent adults (EA) for EFH and major forage species, was generally low. Based on the three years of entrainment data collected from 2001 through 2003, the eggs and larvae of American plaice and yellowtail flounder were collected in insufficient numbers to calculate EA's. In addition, data found: 2,050 calculated EA's for sand lance; 29 calculated EA for winter flounder; and 893 calculated EA's for Atlantic herring. The EA's for Atlantic herring still represents less than 0.05% of the local source pool and less than 0.00026% of the area stock of Atlantic herring, based on information submitted by the permittee (MRI/TRC, September 2004). These entrainment numbers are consistent with a closed-cycle cooling systems that use much less water and have far reduced potential for entrainment when compared with electric generating facilities of a similar generating capacity that use once-through cooling.

The Newington Power facility incorporates BTA into the design and location of its intake structure, as well as the cooling water requirements of the plant. The cooling water requirements associated with wet cooling technology at this location average approximately 10.8 MGD under normal operating conditions, which is significantly less than required for a once-through system producing the same electrical output. The permittee referred to entrainment studies on once-through cooling systems that show some survival of plankton, unlike the total loss expected from a closed-cycle cooling tower operation, i.e., consumptive vs. non-consumptive. However, even assuming a 50% survival of organisms entrained at the older existing facilities, the permittee estimated that the impact of the Newington Energy Facility, assuming 100% loss, is still considered

to be approximately 40 times less.

**Impingement**

Organisms that have grown to a size too large to pass through intake screens are still vulnerable to being impinged on these screens. Juvenile lifestages are particularly vulnerable to impingement, but adults of certain species are also at risk. As with entrainment, the intake location, design and cooling water flow requirements are major factors in assessing impingement potential.

Fish species that are especially vulnerable to impingement tend to have one or more of the following characteristics:

- pass intake structure in large, dense schools as juveniles or adults;
- are actively pursued as major forage species;
- are attracted to the intake structure as a source of forage or refuge;
- are slow moving or are otherwise unable to escape intake current;
- are structurally delicate, and likely to die if impinged.

Impingement monitoring was required at Newington Energy as part of a previous permit action. Impingement sampling was conducted from October 2002 through January 2004, following the regime set out in the Post-Operational Biological Monitoring Program (TRC, July 2002). In all, thirteen species with an extrapolated annual total of 324 fish were represented in the collections (TRC Impingement Report, March 2004). Grubby (*Myoxocephalus aneaeus*) made up 37 percent of this extrapolated total, Atlantic tomcod (*Microgadus tomcod*) was 25 percent of the total, cunner (*Tautogolabrus adspersus*) was 10 percent, and threespine stickleback (*Gasterosteus aculeatus*) accounted for 6 percent of the total. These four species made up 78 percent of the extrapolated yearly impingement total (TRC Impingement Report, March 2004).

Of the EFH species and their forage, the annual impingement rate for hake was 6 fish observed based on impingement sampling. Winter flounder was observed impinged at an annual rate of 6 fish. Regarding forage species for EFH, Atlantic silverside was observed to be impinged at an annual rate of 4 fish. Atlantic menhaden was observed to be impinged at an annual rate of 12 fish. None of the other EFH species or forage species were collected as part of the impingement sampling program at Newington Energy (TRC Impingement Report, March 2004). This low impingement rate supports EPA's conclusion that the impacts associated with this facility to EFH species, their habitats and forage, have been minimized to the extent that no significant impacts are expected.

The cooling water intake structure at Newington Energy Facility was located and designed to minimize impingement of all species, and maximize survival of organisms that have been impinged. The intake structure was sited to avoid any specific habitats of high value such as eelgrass beds or mudflats, and to take advantage of the river's strong tidal currents, which likely minimizes the number of fish congregating near the intake. In addition, the intake bay openings are 5 feet x 6 feet in size and located 4.5 feet below the

mean low water level and 5 to 6 feet off the bottom of the river. This design avoids concentrations of benthic organisms, as well as surface dwellers such as larval lobster. The intakes have been designed such that approach velocities directly in front of the intakes are no greater than 0.5 feet/second at any tidal stage. The use of a modified Ristroph screen design, including a high and low pressure screen wash system and fish return, maximize the probability of survival for impinged organisms. Also, the intake and fish return are located so as to reduce the chance of re-impingement.

As with entrainment impacts, the wet cooling design of this facility has minimized water requirements, which in combination with low intake velocities, has been demonstrated to reduce impingement.

**Discharge of Effluent (Heat and Salinity)**

The discharge of heated effluent may kill or impair organisms outright, or create intolerable conditions in otherwise high value habitats, and interfere with spawning. Thermal impacts associated with the discharge are related primarily to the dilution capacity of the receiving water, the rate of discharge, and the change in temperature (detla-T or ΔT) of the effluent compared to ambient water temperatures. Another important consideration is the presence of temperature-sensitive organisms and vegetated habitats.

The existing permit as well as the draft requires a maximum discharge temperature of 95° F. Although the temperature limit was increased during the last permit re-issuance, the temperature limit at the edge of the mixing zone was not adjusted. A ΔT no greater than 1°F above ambient at the edge of the designated mixing zone is a requirement of the permit. *See* temperature discussion in Section 6.3.1 of this Fact Sheet. The discharge outfall takes advantage of the near-constant tidal current within the Piscataqua River in order to achieve rapid dilution. The design consists of a multiport diffuser with 6 equally spaced 3-inch ports, each angled towards the centerline of the river. The diffuser is oriented perpendicular to the flow of the river. Even under the extreme case of a ΔT of 35° F, the CORMIX model predicted that a 5° F ΔT (above ambient river temperature) would be maintained within approximately 10 feet of the discharge point, under all tidal scenarios.

Since the river water used to cool the condenser will undergo approximately 2 cycles of concentration in the evaporative cooling tower, the discharge is expected to be negatively buoyant due to increased salinity (approximately doubled). The existing permit as well as the draft requires a maximum daily discharge salinity limit of 66,000 parts per million (ppm). Although the salinity limit was increased during the last permit re-issuance, the requirement that the salinity concentration outside the mixing zone not be raised more than one part per thousand (ppt) above the ambient concentration was not altered. *See* salinity discussion in Section 6.3.1 of this Fact Sheet.

The combined salinity and thermal plumes will likely interact with the substrate beyond the limits of the mixing zone, but are predicted to be within 1 ppt salinity and 1°F of

ambient at the point of interaction.

Post operational monitoring was conducted as established in the thermal/salinity mixing zone characterization studies in a past permit action at this facility to confirm the predicted limits of the thermal and salinity plumes. Additionally, pre-operational dive surveys were conducted to document the baseline benthic community in proximity to the diffuser. After the facility was fully operational, a follow-up dive survey was conducted to examine changes in the benthic community structure. In general, surveys conducted between the benthic control site and the site at the Facility discharge diffuser after Newington Energy began operation revealed much greater similarity between the control and diffuser sites when compared with pre-operational surveys at the same two locations. Although the post-operational number of benthic individuals was lower at the diffuser site, the Shannon[1] diversity indices were nearly equal. An overall increasing trend in species diversity at both survey locations is one indicator that these sites do not seem to be showing signs of stress since the Facility began operation. The study results are fully discussed in the *Newington Power Facility Pre- and Post-Operational Infauna Survey Report* (MRI/TRC, April 2004).

Two more recent mixing zone characterization studies were required in the previous permit action for this facility. The first monitoring program was performed from July 15, 2008 through July 29, 2008. The second monitoring program was performed from July 17, 2009 through August 5, 2009. The objectives of these monitoring programs were to determine if the in-river temperature at the edge of the mixing zone was raised by more than 1°F or the in-river salinity was raised by more than 1 ppt. The mixing zone is defined as 100 feet upstream (flood tide) and 100 feet downstream (ebb tide) of the discharge diffuser (Outfall 001) with a width of 100 feet and a height of 20 feet from the bottom. EPA and NH DES reviewed the results of these studies as part of this permit reauthorization action and have determined that the small exceedances that occurred during the 2008 study were biologically insignificant.

Early lifestages that are adrift in the water column and cannot avoid the discharge may become entrained in the plume. However, lethal thermal and salinity conditions are expected to be restricted to the immediate area around the discharge point. Non-lethal effects may render some organisms less fit for survival, but since organisms will be exposed for such a brief period of time (approximately 1 second), adverse effects will likely be limited to a temporary increase in vulnerability to predation. The permittee estimated that impacts to fish resources related to discharge plume entrainment would be approximately 1/20 of 1 percent of the local populations, based on volumetric estimates of exposed larvae.

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[1] The Shannon diversity index is commonly used to characterize species diversity in a community. Shannon's index accounts for both abundance and evenness of the species present. The proportion of species relative to the total number of species is calculated, and then multiplied by the natural logarithm of this proportion. The resulting product is summed across species, and multiplied by -1.

**EPA's Opinion of all Potential Impacts to EFH Species**

EPA has concluded that the Newington Energy Facility operating conditions and the limits and conditions contained in this Draft Permit minimize adverse effects to the Piscataqua River EFH for the following reasons:

1- The closed-cycle recirculating system significantly reduces the amount of river water withdrawn compared to the more traditional "once-through" cooling water systems in operation at most coastal locations; a reduction of nearly 95%;
2- During discharge, the effluent is rapidly diluted (a dilution factor of 100:1 for all tidal occurrences except for the 30 minute slack tide period, when the dilution factor is 44:1) so as to raise the ambient temperature by no more than 1 degree Fahrenheit at the edge of the mixing zone;
3- The WET sampling frequency in this Draft Permit is four (4) tests per year, using two (2) species: Mysid Shrimp (*Americamysis bahia*) and Inland Silverside (*Menidia beryllina*), in order to evaluate the effluent's ability to meet permitted limits and/or in stream NH-Standards;
4- The location, design, construction, and capacity of the facility's cooling water intake structure (CWIS) reflect the Best Technology Available (BTA) for minimizing adverse environmental impacts; and
5- Environmental monitoring has provided site-specific data, entrainment and impingement rates, evaluation of the local benthic community, and plume characteristics and movement. Data collected support the conclusion that impacts associated with the facility to EFH species, their habitats and forage, have been minimized.

EPA believes that the conditions and limitations contained within the draft permit adequately protects all aquatic life, including those with designated EFH in the receiving water, and that further mitigation is not warranted. Should adverse impacts to EFH be detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions, NMFS will be contacted and an EFH consultation will be re-initiated.

# Attachment E – Endangered Species Act Assessment

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) 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 (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of 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 result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, or plants to determine if any listed species might potentially be impacted by the re-issuance of this NPDES permit. The two listed species that have the potential to be present in the vicinity of Newington Energy are the shortnose sturgeon (*Acipenser brevirostrum*) and the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*).

**Shortnose sturgeon**

The shortnose sturgeon was placed on the original endangered species list in 1967 [32 Fed. Reg. 4001 (1967)] by the USFWS. Currently, NMFS has authority over this species under Section 4(a) (2) of the ESA, 16 U.S.C. Section 1533 (a) (2). At present, there are 19 recognized distinct population segments (Shortnose Sturgeon Recovery Plan, NMFS, 1998), which all remain listed as endangered.

The Shortnose Sturgeon Recovery Plan states that "There are no known shortnose sturgeon populations in the rivers between the Androscoggin and Merrimack rivers." However, information contained in the NMFS Protected Resources website at http://www.nmfs.noaa.gov/pr/species/fish/shortnosesturgeon.htm lists the shortnose sturgeon as occurring in the Piscataqua River. In addition, the Atlantic States Marine Fisheries Commission, *Atlantic Sturgeon Stock Assessment*, *Peer Review Report*, March 1998, reported that "… two captures of shortnose sturgeon have been documented [in the Piscataqua River ] (New Hampshire Fish & Game, 1989)."

In order to obtain the most up-to-date assessment regarding the occurrence of shortnose sturgeon in the Piscataqua River, EPA contacted NMFS directly. As part of a communication with NMFS for the Dover Wastewater Treatment Facility (WWTF), NMFS reported that shortnose sturgeon are not known to utilize the portion of the Piscataqua River in the vicinity of the Dover WWTF (e-mail from C. Vaccaro, NMFS to D. Arsenault, EPA, September 12, 2011). Since the Newington Energy Facility is approximately 4.3 miles downstream of the Dover WWTF, shortnose sturgeon are not expected to be present in the vicinity of this facility either.

Based on this evaluation and the expected distribution of the species, EPA has determined that there are no shortnose sturgeons in the action area and that the reissuance of the permit will have no effect on the species. Therefore, consultation under Section 7 of the ESA with NMFS for shortnose sturgeon is not required.

**Atlantic sturgeon**

On February 6, 2012, NOAA's Fisheries Service published in the federal register a final decision to list five distinct population segments of Atlantic sturgeon under the Endangered Species Act. The Chesapeake Bay, New York Bight, Carolina, and South Atlantic populations of Atlantic sturgeon were listed as endangered, while the Gulf of Maine population was listed as threatened. The decision became effective on April 6, 2012. Atlantic sturgeon found in the Piscataqua River are part of the Gulf of Maine population and therefore listed as threatened. The Atlantic States Marine Fisheries Commission, *Atlantic Sturgeon Stock Assessment*, *Peer Review Report*, March 1998, reported that, "An occasional Atlantic sturgeon (Hoff 1980) has been captured in the Piscataqua River…". However, since 1990, NH F&G has not observed or received any reports of Atlantic sturgeon of any age-class being captured in the Great Bay Estuary and its tributaries (B. Smith, NH F&G, Pers. Comm. to the Atlantic Sturgeon Status Review Team, 2006). The Atlantic Sturgeon Status Review Team and NH F&G biologists concluded that the Great Bay Atlantic sturgeon population is likely extirpated. *See* Atlantic Sturgeon Status Review Team. 2007. Status Review of Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus). Report to National Marine Fisheries Service, Northeast Regional Office. February 23, 2007. 174 pp.

As part of a more recent communication with NMFS for the Dover WWTF, NMFS reported that Atlantic sturgeon do in fact use the portion of the Piscataqua River in the vicinity of the Dover WWTF. E-mail from C. Vaccaro, NMFS to D. Arsenault, EPA, September 12, 2011. Since the Newington Energy Facility is approximately 4.3 miles downstream of the Dover WWTF, Atlantic sturgeon are expected to be present in the vicinity of this facility as well.

Based on this information and the expected distribution of the species, EPA has determined that Atlantic sturgeon may be present in the action area and this species may be affected by the discharges authorized by the proposed permit. EPA must consult with NMFS under Section 7 of the ESA. EPA has evaluated the potential impacts of the permit action on Atlantic sturgeon. On the basis of this evaluation, which is discussed below, EPA's determination is that this action "is not likely to adversely affect listed species or critical habitat." [1] 16 C.F.R. § 402.13(a). As a result, EPA will, in a separate

[1] A project can be considered "unlikely to adversely affect" a listed species "when direct or indirect effects of the proposed project on listed species are expected to be discountable, insignificant or completely beneficial." August 20, 2009, Letter from Patricia A. Kurkul, Regional Administrator, NOAA, National Marine Fisheries Service, Northeast Region, to Melville P. Cote, EPA Region 1 ("NOAA's August 20, 2009, Rockport Consultation Letter")

letter, request NMFS's written concurrence with EPA's determination in order to complete the consultation with NMFS on an "informal" basis. *See* 16 C.F.R. § 402.13(a). If NMFS does not concur, then "formal consultation" will be necessary.

**Receiving Water Description**

Newington Energy Facility withdraws water from and discharges to the lower Piscataqua River. The Piscataqua River is high value habitat for a variety of marine and estuarine species, and serves as the only conduit between the Gulf of Maine and Great Bay Estuary. While some fish species permanently reside in the river, most use it to either access spawning or nursery habitats in the Great Bay Estuary and associated rivers, or to migrate from these areas to marine habitats in the Gulf of Maine and beyond. Still others are seasonally present, preying on the concentrated but temporal influx of migrating forage species.

The Piscataqua is a tidal river approximately 13 miles long, which empties into Portsmouth Harbor/ Atlantic Ocean. The tide in this river is semi-diurnal with an average period of 12.4 hours. The lower portion of the Piscataqua River has been characterized as a well-mixed estuary (Newington Energy Facility 1998 NPDES Permit Application, TRC, p. 4-5). Tidal flushing requires six to 12 tidal cycles (3 to 6 days) and tidal mixing forces cause the water column to be vertically well mixed.

The Piscataqua River is classified as a Class B water body pursuant to the State of New Hampshire Surface Water Quality Regulations (N.H. Code of Administrative Rules, PART Env-Wq 1703.01) and N.H. RSA 485-A:8. Class B waters are "considered as being acceptable for fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies." (RSA 485-A:8, II)

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 section of the Piscataqua River that NEF discharges into is on the 2010, CWA 303(d) list for polychlorinated biphenyls (PCB's), mercury and dioxin.

**Facility Description**

EP Newington Energy Facility, located in Newington, New Hampshire, is a 525 megawatt (MW) natural gas and #2 fuel oil fired, combined cycle electrical generating station. The Station is an "intermediate" facility, having an average yearly capacity utilization rate of 56.8% for 2011. The Station has two, gas-fired combustion turbine generators (CTG) with two corresponding heat recovery steam generators (HRSG) and a condensing steam turbine generator. Commercial operation began in November, 2002.

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(addressing ESA issues concerning EPA's proposed NPDES permit for the Rockport, MA, POTW).

There are also two small package boilers which are used for heat and six natural gas-fired heaters for pre-heating the fuel.

Newington Energy Facility's current NPDES Permit allows the withdrawal of cooling water from and the discharge of pollutants to the Piscataqua River. Attachment A-1 shows the intake and discharge locations. A mechanical draft cooling tower is used to cool and recirculate non-contact condenser cooling water, thus reducing the amount of water removed from the river compared to once-through cooling systems. The structure is a fiberglass, 10-cell mechanical draft cooling tower designed to eliminate waste condenser heat through the process of water evaporation. The facility intakes a maximum of 10.8 million gallons per day (MGD) of water from the Piscataqua River for cooling tower make-up. The cooling tower is equipped with a plume abatement system to prevent the formation of ground-level fog and icing during the winter.

NEF is permitted to discharge intake screen wash water and cooling tower wastewater mixed with other internal process wastes. Storm water discharges to the Piscataqua River are covered by the facility's Multi-Sector General Storm Water Permit (#NHR05BV42).

The facility uses a 30-foot by 70-foot cooling water intake structure (CWIS) to withdraw water from the river. The CWIS is located between 200-255 feet off-shore in the Piscataqua River (depending on the tide). The intake is equipped with two intake bays containing a 5,000 gallons per minute (gpm) variable speed pump in each bay resulting in a total design capacity of 14.4 MGD. Although the total design flow is 14.4 MGD, the total actual maximum flow is reduced to 10.8 MGD due to pressure changes and friction. Generally, only one pump is used at a time and occasionally two pumps are used. Inside the intake channels is a cross over sluice gate. This gate is normally kept open, which results in lower through screen/approach velocities because of the increase screen area available. The intake bay openings are 5 feet x 6 feet in size and located 4.5 feet below the mean low water level and 5 to 6 feet off the bottom of the river. Each intake bay is equipped with vertically rotating modified Ristroph screens with 1/4 inch x 1/2 inch mesh. The screens are designed to rotate based on pressure differentials. Through-screen velocity has been calculated to be at or below 0.5 feet per second. Email from Alan Douglass, NEF to Sharon DeMeo, EPA, March 1, 2007. Low pressure (15 psi) spray wash is used to remove trapped organisms from the intake screens. These organisms are returned directly to the river (below low tide level) via a covered sluiceway. High pressure spray (60 psi) removes all remaining material from the screens to a dumpster for off-site removal. The dumpster drains back to the intake bays. The spray wash pump capacity is 150 gpm.

Low volume wastes (as defined in 40 C.F.R. 423.11) are directed to the cooling tower basin (internal Outfall 002) to minimize total water demand and limit wastewater discharge requirements. Low volume wastes include boiler blowdown, treated demineralizer waste, floor drains, vacuum pump seal water, and evaporative cooler blowdown. Currently, a maximum 4.0 MGD of heated cooling tower blowdown containing low volume waste is permitted to discharge to the Piscataqua River through a submerged multi-port diffuser (Outfall 001) located on the bottom of the river, at a depth

of approximately 35 feet and 700 feet off-shore (500 feet from the intake structure). The diffuser consists of six equally spaced three-inch diameter ports oriented in a cross channel direction at a 60-degree angle to the vertical. The diffuser is approximately 66 feet in length. Port spacing is approximately 13.1 feet (4 meters). The discharge outfall takes advantage of the near-constant tidal current within the Piscataqua River in order to achieve rapid dilution.

## Potential Impacts to Atlantic Sturgeon from Facility Operation

The Newington Energy Facility, like all facilities that utilize a natural waterbody for cooling purposes, can impact aquatic resources in three major ways: (1) by the impingement of larger organisms on the intake screens and the entrainment of small organisms into and through the cooling water system; (2) by creating adverse conditions in the receiving waters from the discharge of heated effluent; and (3) by creating adverse conditions in the receiving waters from the discharge of pollutants. The following information details these three potential impacts.

### Impingement

Organisms that have grown to a size too large to pass through intake screens are still vulnerable to being impinged on these screens. Juvenile lifestages are particularly vulnerable to impingement, but adults of certain species are also at risk. As with entrainment, the intake location, design and cooling water flow requirements are major factors in assessing impingement potential.

Fish species that are especially vulnerable to impingement tend to have one or more of the following characteristics:

- pass intake structure in large, dense schools as juveniles or adults;
- are actively pursued as major forage species;
- are attracted to the intake structure as a source of forage or refuge;
- are slow moving or are otherwise unable to escape intake current; and
- are structurally delicate, and likely to die if impinged.

Impingement monitoring was required at Newington Energy as part of a previous permit action. Impingement sampling was conducted from October 2002 through January 2004, following the regime set out in the Post-Operational Biological Monitoring Program (TRC, July 2002). Site specific impingement data for this facility is included in Section 7.0 of this Fact Sheet.

Juvenile and adult life stages of Atlantic sturgeon may be present in the vicinity of the Newington Energy Station CWIS. However, several factors greatly reduce the potential for these life stages to become impinged at the facility. First, these life stages of Atlantic sturgeon are expected to be demersal, seeking out the deeper channelized portion of this section of the Piscataqua River. The intake is 5 to 6 feet off the bottom of the river. Second, the severe river currents in this area of Great Bay can reach velocities as high as

6.75 feet/second. The approach velocities directly in front of the intakes are no greater than 0.5 feet/second. It is reasonable to assume that fish in this area that must navigate these high river currents should be able to easily resist such a low approach velocity at the intakes and avoid impingement. Third, the cooling water intake structure at Newington Energy Facility was designed to maximize survival of organisms that have been impinged. The use of a modified Ristroph screen design, including a high and low pressure screen wash system and fish return, maximize the probability of survival for impinged organisms. Also, the intake and fish return are located so as to reduce the chance of re-impingement. So, if an Atlantic sturgeon is impinged at this CWIS, the fish return system is designed to transport the sturgeon back to the river with a minimum amount of stress. Lastly, the closed cycle wet cooling design of this facility has greatly minimized water requirements, which in combination with low intake velocities, has been demonstrated to reduce overall impingement.

Based on the expected habitat where Atlantic sturgeon reside, the physical placement of the cooling water intake structure in the water column, the relatively low approach velocities at the intakes relative to the river currents, and the design of the fish return system, the potential for impingement mortality, if impingement occurs at all, is likely to have an insignificant or discountable effect on Atlantic sturgeon.

Entrainment

The potential to impact aquatic organisms by entrainment largely depends on the presence and abundance of organisms that are vulnerable to entrainment, and the flow required for cooling. Organisms (including forage species) most vulnerable to entrainment in the vicinity of this proposed facility are species that have positively buoyant eggs, and/or pelagic larvae. Other important considerations include the location and design of the intake structure. According to section 316(b) of the Clean Water Act, any point source that uses a cooling water intake structure (CWIS) must ensure that its location, design, construction, and capacity reflects the best technology available (BTA) for minimizing adverse environmental impact. Section 6.4 of this Fact Sheet details the BTA for the Newington Energy CWIS. Site specific entrainment data for this facility is included in Section 7.0 of this Fact Sheet.

The area of the Piscataqua River influenced by the Newington Energy Station is not considered to be a likely spawning area for Atlantic sturgeon due to its salinity range of up to 30 parts per thousand at high tide. If any limited spawning does occur in the vicinity, sturgeon egg and larval stages are not considered vulnerable to entrainment. That is because sturgeon eggs are highly adhesive and are deposited on the bottom, usually on hard surfaces (i.e. cobble) (Smith and Clugston 1997). The yolksac larval stage and older life stages of young also assume a demersal existence. The habitat utilized by these early life stages keeps them away from the influence of the facility intake, which is 5 to 6 feet off the bottom of the river. Lastly, the closed cycle wet cooling design of this facility has greatly minimized water requirements, which has been demonstrated to directly reduce the overall potential for entrainment.

Based on the expected location in the Piscataqua River of Atlantic sturgeon early life stages vulnerable to entrainment, the habitat where they reside, and the physical placement of the cooling water intake structure in the water column, the minimal potential for entrainment, if at all, is likely to have an insignificant or discountable effect on Atlantic sturgeon.

Discharge of Effluent (Heat and Salinity)

The discharge of heated effluent may kill or impair organisms outright, or create intolerable conditions in otherwise high value habitats, and interfere with spawning. Thermal impacts associated with the discharge are related primarily to the dilution capacity of the receiving water, the rate of discharge, and the change in temperature (detla-T or ΔT) of the effluent compared to ambient water temperatures. Another important consideration is the presence of temperature-sensitive organisms and vegetated habitats.

The existing permit as well as the draft requires a maximum discharge temperature of 95° F. Although the temperature limit was increased during the last permit re-issuance, the temperature limit at the edge of the mixing zone was not adjusted. A ΔT no greater than 1°F above ambient at the edge of the designated mixing zone is a requirement of the permit. *See* temperature discussion in Section 6.3.1 of this Fact Sheet. The discharge outfall takes advantage of the near-constant tidal current within the Piscataqua River in order to achieve rapid dilution. The design consists of a multiport diffuser with 6 equally spaced 3-inch ports, each angled towards the centerline of the river. The diffuser is oriented perpendicular to the flow of the river. Even under the extreme case of a ΔT of 35° F, the CORMIX model predicted that a 5° F ΔT (above ambient river temperature) would be maintained within approximately 10 feet of the discharge point, under all tidal scenarios.

Since the river water used to cool the condenser will undergo approximately 2 cycles of concentration in the evaporative cooling tower, the discharge is expected to be negatively buoyant due to increased salinity (approximately doubled). The existing permit as well as the draft requires a maximum daily discharge salinity limit of 66,000 parts per million (ppm). Although the salinity limit was increased during the last permit re-issuance, the requirement that the salinity concentration outside the mixing zone not be raised more than one part per thousand (ppt) above the ambient concentration was not altered. *See* salinity discussion in Section 6.3.1 of this Fact Sheet.

The combined salinity and thermal plumes will likely interact with the substrate beyond the limits of the mixing zone, but are predicted to be within 1 ppt salinity and 1°F of ambient at the point of interaction.

Two recent mixing zone characterization studies were required in the previous permit action for this facility. The first monitoring program was performed from July 15, 2008 through July 29, 2008. The second monitoring program was performed from July 17, 2009 through August 5, 2009. The objectives of these monitoring programs were to

determine if the in-river temperature at the edge of the mixing zone was raised by more than 1°F or the in-river salinity was raised by more than 1 ppt. The mixing zone is defined as 100 feet upstream (flood tide) and 100 feet downstream (ebb tide) of the discharge diffuser (Outfall 001) with a width of 100 feet and a height of 20 feet from the bottom. EPA and NH DES reviewed the results of these studies as part of this permit reauthorization action and have determined that the small exceedances that occurred during the 2008 study were biologically insignificant.

It is unlikely that early lifestages of Atlantic sturgeon are present in that reach of the river. However, any larvae that are adrift in the water column and cannot avoid the discharge may become entrained in the plume. Lethal thermal and salinity conditions are expected to be restricted to the immediate area around the discharge point. Non-lethal effects may render some organisms less fit for survival, but since organisms will be exposed for such a brief period of time (approximately 1 second) adverse effects will likely be limited to a temporary increase in vulnerability to predation. The permittee estimated that impacts to all fish resources related to discharge plume entrainment would be approximately 1/20 of 1 percent of the local populations, based on volumetric estimates of all exposed larvae.

Juvenile and adult life stages of Atlantic sturgeon have a greater potential of coming into contact with the temperature and salinity plume due to its location along the bottom of the river (where Atlantic sturgeon may be found) and the negatively buoyant characteristics of the plume that will cause it to sink to the benthic habitat of the river. However, the predicted width of the temperature and salinity plume from the bottom diffuser ports is 100 feet. The width of the Piscataqua River in the vicinity of the discharge is approximately 1,900 feet. The relatively small area of the plume will allow sturgeon room to avoid the plume in the overall width of the river. In addition, the small increase in temperature and salinity above ambient (1°F temperature increase and 1 ppt salinity increase at the edge of the mixing zone) of the plume is thought to have a minimal impact on juvenile or adult Atlantic sturgeon if they do briefly encounter the plume.

Based on relatively small size and intensity of the temperature and salinity plume and the brief exposure time of any lifestage of Atlantic sturgeon that may encounter the plume, this discharge is likely to have an insignificant or discountable effect on Atlantic sturgeon.

Discharge of Pollutants

The discharge of pollutants via the six Outfall 001bottom diffusers has been verified by NHDES to undergo a dilution of 100:1 when discharged during conditions occurring 15 minutes before and 15 minutes after low slack spring and neap tide conditions. During slack tide conditions within the 30 minute tidal window, NHDES calculated a dilution of 44:1. Instantaneous and complete mixing is assumed to take place in the mixing zone defined as 100 feet upstream (flood tide) and 100 feet downstream (ebb tide) of the discharge diffuser (Outfall 001) with a width of 100 feet and a height of 20 feet from the bottom.

*Chlorine*

The Draft Permit limit for free available chlorine is based on the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44. This limit was originally established based on New Source Performance Standards (NSPS) established in the Federal Guidelines for the Steam Electric Power Generating Point Source Category (40 CFR Part 423.15(j)(1)).

Section 423.15(j)(1) limits the maximum and average concentration of free available chlorine discharged in cooling tower blowdown as shown below. The quantity of pollutant (mass limit) is determined by multiplying the flow of cooling tower blowdown by the concentration listed in the table. However, the existing and Draft Permit limits' are expressed as concentration limits pursuant to Section 423.15(m).

| **Pollutant** | **Maximum concentration (mg/l)** | **Average concentration (mg/l)** |
|---|---|---|
| Free Available Chlorine | 0.5 | 0.2 |

40 C.F.R. Part 423.15(j)(2) prohibits the discharge of free available chlorine or total residual chlorine (TRC) from any unit for more than two hours in any one day, and; not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate that the units in a particular location cannot operate at or below this level of chlorination.

Newington Energy chlorinates the cooling tower system on most days by "shocking" the system. Each evening, the discharge valve is closed and approximately 50 gallons of 13-15% sodium hypochlorite is added. The cooling system is allowed to recirculate for two to four hours until periodic testing determines that the free available chlorine concentration is below detection. If blowdown (i.e. discharging) must resume before there is no detectable amount of free available chlorine, Newington Energy must demonstrate that there is no detectable amount of total residual oxidants (TRO) within two hours.[2] TRO testing is required in the Draft Permit, as opposed to TRC, because the intake water contains bromides (i.e., saline water). *See* 40 C.F.R. § 423.11(a).

A review of Newington Energy's DMRs show that from 2007 through 2011, no free available chlorine was detected in the cooling tower blowdown A free chlorine measurement of 0.000 mg/l was recorded before the blowdown was discharged to Outfall

[2] Although the plant operates 2 HRSG's, there is only one steam turbine generator with one corresponding non-contact surface condenser requiring cooling water. Therefore, based on the chlorination method and plant set-up, EPA considers this one unit for the determination of how many hours (i.e. two) in one day that Newington Energy may discharge effluent containing free available chlorine (within permitted limits).

001. In the unlikely event that blowdown must resume before there is no detectable amount of free available chlorine, the following dilution would take place at Outfall 001 and last for no more than two hours.

The maximum concentration of free available chlorine at the edge of the mixing zone under the 30 minute worst case tidal dilution of 44:1 would be:

0.5 mg/l / 44 = 0.0114 mg/l (potential for 30 minutes)

The maximum concentration of free available chlorine at the edge of the mixing zone under all other tidal range dilutions of 100:1 would be:

0.5 mg/l / 100 = 0.005 mg/l

At these extremely low free available chlorine concentrations, along with the remote chance that the cooling tower blowdown would be discharged while still containing detectable levels of free available chlorine, coupled with the limited duration of such a rare event (a maximum of two hours), the discharge of this pollutant is likely to have an insignificant or discountable effect on Atlantic sturgeon.

*pH*

EPA, in consultation with NH DES has determined that the current permit as well as this Draft Permit retains the pH limited range of 6.5 - 9.0 s.u. See Section 6.3.1 of this Fact Sheet for details supporting the pH range. Since this pH range is generally considered harmless to marine life in Great Bay, no adverse effects to Atlantic sturgeon are likely to occur as a result of a discharge meeting the permitted pH range.

*Priority Pollutants*

The Draft Permit limits for 126 priority pollutants[3], including total chromium and zinc, are based on the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44 and on the New Source Performance Standards (NSPS) established in the Federal Guidelines for the Steam Electric Power Generating Point Source Category (40 CFR Part 423.15(j)(1) for cooling tower blowdown). In accordance with the Federal Guidelines, the Draft Permit requires the permittee demonstrate that none of the 126 priority pollutants (except chromium and zinc) are detectable in the cooling tower blowdown.

| Pollutant | Maximum for any 1 day | Average of daily values |
|---|---|---|

[3] The 126 priority pollutants (See 40 C.F.R. 423 Appendix A) are those potentially contained in chemicals added for cooling tower maintenance. In this case, since low volume waste streams are directed to the cooling tower, EPA includes these as potential sources of priority pollutants.

| | **(mg/l)** | **for 30 consecutive days shall not exceed (mg/l)** |
|---|---|---|
| The 126 Priority Pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except: | No detectable amount | No detectable amount |
| Chromium, total | 0.2 | 0.2 |
| Zinc, total | 1.0 | 1.0 |

*Total Chromium*

The maximum concentration of total chromium at the edge of the mixing zone under the 30 minute worst case tidal dilution of 44:1 would be:

0.2 mg/l / 44 = 0.0045 mg/l = 4.5 ug/l (potential for 30 minutes)

The maximum concentration of total chromium at the edge of the mixing zone under all other tidal range dilutions of 100:1 would be:

0.2 mg/l / 100 = 0.0020 mg/l = 2.0 ug/l

These values are below the EPA National Recommended Water Quality Criteria for the protection of aquatic life in surface water for chromium (acute; 1,108 ug/l and chronic; 50.4 ug/l)

At these low total chromium concentrations, along with the limited duration of the blowdown events, the discharge of total chromium is likely to have an insignificant or discountable effect on Atlantic sturgeon.

*Total Zinc*

The maximum concentration of total zinc at the edge of the mixing zone under the 30 minute worst case tidal dilution of 44:1 would be:

1.0 mg/l / 44 = 0.0227 mg/l = 22.7 ug/l (potential for 30 minutes)

The maximum concentration of total zinc at the edge of the mixing zone under all other tidal range dilutions of 100:1 would be:

1.0 mg/l / 100 = 0.0100 mg/l = 10.0 ug/l

These values are below the EPA National Recommended Water Quality Criteria for the protection of aquatic life for zinc (acute; 95.1 ug/l and chronic; 85.6 ug/l).

At these low total zinc concentrations, along with the limited duration of the blowdown

events, the discharge of total zinc is likely to have an insignificant or discountable effect on Atlantic sturgeon.

*Total Suspended Solids and Oil & Grease*

The Draft Permit limits for Total Suspended Solids (TSS) and Oil and Grease (O&G) are based on the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44. These limits were originally established based on NSPS established in the Federal Guidelines for the Steam Electric Power Generating Point Source Category (40 CFR Part 423.15(c) for low volume waste source(s)).

Section 423.15(c) limits the maximum and average concentration of TSS and O&G discharged in low volume waste source(s) as shown below. The quantity of pollutant (mass limit) is determined by multiplying the flow of low volume waste source by the concentration listed in the table. However, the existing permit, as well as the Draft Permit limits, are expressed as concentration limits pursuant to Section 423.15(m). The permit reflects these limits prior to mixing with cooling water in the tower.

| **Pollutant** | **Maximum for any 1 day (mg/l)** | **Average of daily values for 30 consecutive days shall not exceed (mg/l)** |
|---|---|---|
| TSS | 100.0 | 30.0 |
| O&G | 20.0 | 15.0 |

*Total Suspended Solids*

The maximum concentration of TSS at the edge of the mixing zone under the 30 minute worst case tidal dilution of 44:1 would be:

100.0 mg/l / 44 = 2.27 mg/l (potential for 30 minutes)

The maximum concentration of TSS at the edge of the mixing zone under all other tidal range dilutions of 100:1 would be:

100.0 mg/l / 100 = 1.00 mg/l

Studies of the effects of turbid waters on fish suggest that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). The studies reviewed by Burton demonstrated lethal effects to fish at concentrations of 580mg/L to 700,000mg/L depending on species. Sublethal effects have been observed at substantially lower turbidity levels. For example, prey consumption was significantly lower for striped bass larvae tested at concentrations of 200 and 500 mg/L compared to larvae exposed to 0 and 75 mg/L (Breitburg 1988 in Burton l993). Studies with striped bass adults showed that pre-spawners did not avoid concentrations of 954 to 1,920 mg/L to reach spawning sites (Summerfelt and Moiser

1976 and Combs 1979 in Burton l993). While there have been no directed studies on the effects of TSS on Atlantic sturgeon, shortnose sturgeon juveniles and adults are often documented in turbid water. Dadswell (1984) reports that shortnose sturgeon are more active under lowered light conditions, such as those in turbid waters. Based on the general similarity of the two sturgeon species, Atlantic sturgeon are assumed to be as least as tolerant to suspended sediment as other estuarine fish such as striped bass. Based on this information, it is likely that the discharge of total suspended solids in the low concentrations allowed by the Draft Permit will have an insignificant effect on Atlantic sturgeon.

*Oil and Grease*

The maximum concentration of O&G at the edge of the mixing zone under the 30 minute worst case tidal dilution of 44:1 would be:

20.0 mg/l / 44 = 0.45 mg/l (potential for 30 minutes)

The maximum concentration of O&G at the edge of the mixing zone under all other tidal range dilutions of 100:1 would be:

20.0 mg/l / 100 = 0.20 mg/l

This extremely low concentration of oil and grease will be localized within a small mixing zone area. Levels of O&G will quickly drop below the detection limit in the high energy tidal currents of the Piscataqua River. Based on this information, it is likely that the discharge of O&G in the low concentrations allowed by the Draft Permit will have an insignificant effect on Atlantic sturgeon.

**Finding**

As detailed in this Fact Sheet, the closed-cycle recirculating system significantly reduces the amount of river water withdrawn compared to the more traditional "once-through" cooling water systems in operation at most coastal locations; a reduction of nearly 95%. During discharge, the effluent is rapidly diluted (a dilution factor of 100:1 for all tidal occurrences except for the 30 minute slack tide period, when the dilution factor is 44:1) so as to raise the ambient temperature by no more than 1 degree Fahrenheit at the edge of the mixing zone. The WET sampling frequency in this Draft Permit is four (4) tests per year, using two (2) species: Mysid Shrimp (*Americamysis bahia*) and Inland Silverside (*Menidia beryllina*), in order to evaluate the effluent's ability to meet permitted limits and/or in stream NH-Standards. The location, design, construction, and capacity of the facility's cooling water intake structure (CWIS) reflect the Best Technology Available (BTA) for minimizing adverse environmental impacts. Based on these factors and the analysis of potential impacts to Atlantic sturgeon presented in this section, EPA has determined that impacts to Atlantic sturgeon from the intake and discharge at Newington Energy Facility, if any, will be insignificant or discountable. EPA is seeking concurrence

from NMFS through this analysis, the Draft Permit and a separate letter.

**ATTACHMENT A**

**MARINE ACUTE**
**TOXICITY TEST PROCEDURE AND PROTOCOL**

## I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **2007.0 - Mysid Shrimp (Americamysis bahia) definitive 48 hour test.**
- **2006.0 - Inland Silverside (Menidia beryllina) definitive 48 hour test.**

Acute toxicity data shall be reported as outlined in Section VIII.

## II. METHODS

The permittee shall use the most recent 40 CFR Part 136 methods. Whole Effluent Toxicity (WET) Test Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/index.cfm#methods

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

## III. SAMPLE COLLECTION

A discharge and receiving water sample shall be collected. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine[1] (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to

[1] For this protocol, total residual chlorine is synonymous with total residual oxidants

sample use for toxicity testing. If performed on site the results should be included on the COC presented to WET laboratory.

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. If dechlorination is necessary, a thiosulfate control consisting of the maximum concentration of thiosulfate used to dechlorinate the sample in the toxicity test control water must also be run in the WET test.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol. Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6$^{o}$ C.

## IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water is found to be, or suspected to be toxic or unreliable, ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is

species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity require ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

*See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.*

## V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA Region 1 requires tests be performed using four replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from fewer replicates. The following tables summarize the accepted Americamysis and Menidia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE MYSID, AMERICAMYSIS BAHIA 48 HOUR TEST**[1]

| | |
|---|---|
| 1. Test type | 48hr Static, non-renewal |
| 2. Salinity | 25ppt ± 10 percent for all dilutions by adding dry ocean salts |
| 3. Temperature ($^oC$) | $20^oC \pm 1^oC$ or $25^oC \pm 1^oC$, temperature must not deviate by more than $3^oC$ during test |
| 4. Light quality | Ambient laboratory illumination |
| 5. Photoperiod | 16 hour light, 8 hour dark |
| 6. Test chamber size | 250 ml (minimum) |
| 7. Test solution volume | 200 ml/replicate (minimum) |
| 8. Age of test organisms | 1-5 days, < 24 hours age range |
| 9. No. Mysids per test chamber | 10 |
| 10. No. of replicate test chambers per treatment | 4 |
| 11. Total no. Mysids per test concentration | 40 |
| 12. Feeding regime | Light feeding using concentrated Artemia naupli while holding prior to initiating the test |
| 13. Aeration [2] | None |
| 14. Dilution water | 5-30 ppt, +/- 10%; Natural seawater, or deionized water mixed with artificial sea salts |
| 15. Dilution factor | ≥ 0.5 |
| 16. Number of dilutions [3] | 5 plus a control. An additional dilution at the permitted effluent concentration (% |

| | |
|---|---|
| | effluent) is required if it is not included in the dilution series. |
| 17. Effect measured | Mortality - no movement of body appendages on gentle prodding |
| 18. Test acceptability | 90% or greater survival of test organisms in control solution |
| 19. Sampling requirements | For on-site tests, samples are used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection. |
| 20. Sample volume required | Minimum 1 liter for effluents and 2 liters for receiving waters |

Footnotes:

[1] Adapted from EPA 821-R-02-012

[2] If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

[3] When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND TOXICITY TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA 48 HOUR TEST[1]**

| | |
|---|---|
| 1. Test Type | 48 hr Static, non-renewal |
| 2. Salinity | 25 ppt $\pm$ 10 % by adding dry ocean salts |
| 3. Temperature | $20^{o}C \pm 1^{o}C$ or $25^{o}C \pm 1^{o}C$, temperature must not deviate by more than $3^{o}C$ during test |
| 4. Light Quality | Ambient laboratory illumination |
| 5. Photoperiod | 16 hr light, 8 hr dark |
| 6. Size of test vessel | 250 mL (minimum) |
| 7. Volume of test solution | 200 mL/replicate (minimum) |
| 8. Age of fish | 9-14 days; 24 hr age range |
| 9. No. fish per chamber | 10 (not to exceed loading limits) |
| 10. No. of replicate test vessels per treatment | 4 |
| 11. Total no. organisms per concentration | 40 |
| 12. Feeding regime | Light feeding using concentrated Artemia nauplii while holding prior to initiating the test |
| 13. Aeration[2] | None |
| 14. Dilution water | 5-32 ppt, +/- 10% ; Natural seawater, or deionized water mixed with artificial sea salts. |
| 15. Dilution factor | $\geq$ 0.5 |
| 16. Number of dilutions[3] | 5 plus a control. An additional dilution at the permitted concentration (% effluent) is required if it is not included in the dilution series. |
| 17. Effect measured | Mortality-no movement on gentle prodding. |

| | |
|---|---|
| 18. Test acceptability | 90% or greater survival of test organisms in control solution. |
| 19. Sampling requirements | For on-site tests, samples must be used within 24 hours of the time they are removed from the sampling device. Off-site test samples must be used within 36 hours of collection. |
| 20. Sample volume required | Minimum 1 liter for effluents and 2 liters for receiving waters. |

Footnotes:

[1] Adapted from EPA 821-R-02-012.

[2] If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks recommended.

[3] When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

V.1. Test Acceptability Criteria

If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.2. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.2.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25s and LC50 values and ≥ two concentration intervals for NOECs or NOAECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

## VI. CHEMICAL ANALYSIS

At the beginning of the static acute test, pH, salinity, and temperature must be measured at the beginning and end of each 24 hour period in each dilution and in the controls. The following chemical analyses shall be performed for each sampling event.

| Parameter | Effluent | Diluent | Minimum Level for effluent[*1] (mg/L) |
|---|---|---|---|
| pH | x | x | --- |
| Salinity | x | x | ppt(o/oo) |
| Total Residual Chlorine [*2] | x | x | 0.02 |
| Total Solids and Suspended Solids | x | x | --- |
| Ammonia | x | x | 0.1 |
| Total Organic Carbon | x | x | 0.5 |
| | | | |
| Total Metals | | | |
| Cd | x | x | 0.0005 |
| Pb | x | x | 0.0005 |
| Cu | x | x | 0.003 |
| Zn | x | x | 0.005 |
| Ni | x | x | 0.005 |

Superscript:

[*1] These are the minimum levels for effluent (fresh water) samples. Tests on diluents (marine waters) shall be conducted using the Part 136 methods that yield the lowest MLs.

[*2] Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

-Method 4500-Cl E  Low Level Amperometric Titration (the preferred method);
-Method 4500-CL G DPD Photometric Method.

## VII.  TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration

An estimate of the concentration of effluent or toxicant that is lethal to 50% of the test organisms during the time prescribed by the test method.

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart in Figure 6 on page 73 of EPA 821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See flow chart in Figure 13 on page 87 of EPA 821-R-02-012.

## VIII.  TOXICITY TEST REPORTING

A report of results must include the following:

- Toxicity Test summary sheet(s) (Attachment F to the DMR Instructions) which includes:
    - Facility name
    - NPDES permit number
    - Outfall number
    - Sample type
    - Sampling method
    - Effluent TRC concentration
    - Dilution water used
    - Receiving water name and sampling location
    - Test type and species
    - Test start date
    - Effluent concentrations tested (%) and permit limit concentration
    - Applicable reference toxicity test date and whether acceptable or not
    - Age, age range and source of test organisms used for testing
    - Results of TAC review for all applicable controls
    - Permit limit and toxicity test results
    - Summary of any test sensitivity and concentration response evaluation that was conducted

Please note: The NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) are available on EPA's website at http://www.epa.gov/NE/enforcementandassistance/dmr.html

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures;
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s);
- Reference toxicity test control charts;
- All sample chemical/physical data generated, including minimum levels (MLs) and analytical methods used;
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis;
- A discussion of any deviations from test conditions; and
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint.

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
WATER DIVISION
P.O. BOX 95
CONCORD, NEW HAMPSHIRE 03302-0095

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ECOSYSTEM PROTECTION
REGION I
BOSTON, MASSACHUSETTS 02109-3912

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT, AND ISSUANCE OF A STATE SURFACE WATER PERMIT UNDER NH RSA 485-A:13, I(a).

DATE OF NOTICE: **July 20, 2012 – August 18, 2012**

PERMIT NUMBER: **NH0023361**

PUBLIC NOTICE NUMBER: **NH-011-12**

NAME AND MAILING ADDRESS OF APPLICANT:

**EP Newington Energy, L.L.C.**
**200 Shattuck Way**
**Newington, New Hampshire 03801**

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

**EP Newington Energy, L.L.C.**
**200 Shattuck Way**
**Newington, New Hampshire 03801**

RECEIVING WATER: **Piscataqua River**

RECEIVING WATER CLASSIFICATION: Class B

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division have cooperated in the development of a draft permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure that State Water Quality Standards and provisions of the Clean Water Act will be met. EPA has formally requested that the State certify the draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) and the draft permit may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html or by writing or calling EPA's contact person named below:

Sharon DeMeo
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1995

The administrative record containing all documents relating to the draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

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 their arguments in full by **August 18, 2012**, to Sharon DeMeo, U.S. EPA, 5 Post Office Square, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider the draft permit. 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.

FINAL PERMIT DECISION:

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.

HARRY T. STEWART, P.E., DIRECTOR
WATER DIVISION
NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

STEPHEN S. PERKINS, DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
U.S. ENVIRONMENTAL PROTECTION
AGENCY - REGION I