AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

Neptune LNG LLC

is authorized to discharge from the facility located at

Neptune Deepwater Port
Massachusetts Bay

to receiving water named

Massachusetts Bay

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 thirty (30) days after the date of signature.

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

The authorization to discharge contained in this permit shall be effective only during time periods when a National Oceanic and Atmospheric Administration Incidental Take Statement, which exempts the U.S. Environmental Protection Agency from the take prohibitions of the Endangered Species Act, is in effect for the Neptune LNG Deepwater Port.

This permit consists of 8 pages in Part I including effluent limitations, and monitoring requirements, 25 pages in Part II including Standard Conditions, and 5 pages (including cover) in Attachment A, *Operational Monitoring Program for the Neptune Deepwater LNG Port, Massachusetts Bay Offshore Gloucester, MA.*

Signed this 6th day of June 2008

/S/ SIGNATURE ON FILE

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Any regasification vessel, while moored at the deepwater port, must comply with this permit and this permit applies only when the regasification vessel is moored at the deepwater port.
2. During the period beginning on the effective date of the permit and lasting through expiration, the permittee is authorized to **discharge pipe flushing and hydrostatic test water** from **outfall 003.** Discharge shall be limited and monitored by the permittee as specified below:

   OUTFALL 003 – Latitude 42º27'21" Longitude 70º36'07"

Effluent Characteristic (units)	Discharge Limitations	Monitoring Requirements	
	Maximum	Measurement Frequency	Sample Type
Flow rate (gpm)[1]	2,101	Continuous	Estimate[2]
Total suspended solids (mg/l)	100	2/discharge	Grab

[1] Total flow from Outfall 003 shall not exceed twice the total volume required to fill the pipeline lateral and flowline.

[2] The maximum flow rate, which is to be reported in units of gallons per minute (gpm), shall be either measured or estimated based upon the summation of the pump curve value(s) for all pumps operating and controlling the rate of flow.

3. During the period beginning on the effective date of the permit and lasting through expiration, the permittee is authorized to **discharge non-contact cooling water** from **outfall 04A or outfall 04B** during the commissioning of the deepwater port and regasification vessels for a **total of not more than 45 days for any individual vessel**. Discharge shall be limited and monitored by the permittee as specified below:

   OUTFALL 04A - Latitude 42º29'13" Longitude 70º36'30"

   OUTFALL 04B - Latitude 42º27'21" Longitude 70º36'07"

Effluent Characteristic (units)	Discharge Limitations	Monitoring Requirements	
	Maximum Daily	Measurement Frequency	Sample Type
Flow (MGD)	8.2[3]	Continuous	Estimate
Temperature Rise, ΔT (°C)[4]	8[5]	Continuous	Grab

[3] Flow rate shall not exceed 13,900 gallons per minute during any period.

[4]Temperature Rise (ΔT) is the difference between the discharge temperature and the intake temperature. The intake and discharge temperatures shall be continuously measured and recorded by instruments or computers (thermistors) which record a minimum of 12 times per hour. The intake temperature shall be monitored at the intake structure of each unit that is operating. The temperature rise shall be calculated as an hourly average, based on the hourly average intake temperature and the hourly average discharge temperature measured during the same hour.

[5] Maximum instantaneous temperature rise shall not exceed 10ºC.

4. During the period beginning on the effective date of the permit and lasting through expiration, the permittee is authorized to **withdraw cooling water from high and low sea chests** located on each regasification vessel as described in section I.B.1 of this permit. Cooling water withdrawal from each vessel moored at the deepwater port shall be limited and monitored by the permittee as specified below:

COOLING WATER INTAKE[6] AT HIGH AND LOW SEA CHESTS

	Intake Limitations	**Monitoring Requirements**	
Effluent Characteristic (units)	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Flow rate (gpm)	2.25 MGD[7,8]	Continuous	Estimate[2]

[6] Cooling water shall not be discharged while the regasification vessel is moored at the deepwater port.

[7] The total number of hours during which cooling water is withdrawn from both of the deepwater port's two buoys simultaneously shall not exceed 550 hours per year. Each year, the number of hours in that year during which cooling water was withdrawn from both of the deepwater port's two buoys simultaneously shall be reported in the annual report, as described in section I.C.1.

[8] During initial Neptune Deepwater Port and regasification vessel commissioning activities, cooling water intake shall be limited to 8.2 MGD for 45 days for each individual vessel in accordance with section I.A.3. At all other times, the maximum intake flow shall be limited to 2.25 MGD.

5. Total withdrawals of seawater through the cooling water intake structures while regasification vessels are moored at the deepwater port shall not exceed 873 million gallons in any calendar year. Each year, the total annual volume of seawater withdrawal through the cooling water intake structures shall be reported in the annual report, as described in section I.C.1.
6. The pH of the effluent shall be neither less than 6.5 nor greater than 8.5 at any time, nor changed more than 0.2 units outside of the naturally occurring variation.
7. The discharge shall not cause objectionable discoloration of the receiving waters.
8. The effluent shall not contain visible oil sheen, foam, or floating solids at any time.
9. Rainwater and oil from the utility areas that include power generation, boil-off gas compressor, emergency diesel generator, diesel tank, and diesel loading areas where there is a potential for the presence of petroleum hydrocarbons shall be collected in dedicated drip pans. Discharge of rainwater from the drip pans is prohibited.
10. At no time shall the filled pipeline be left open. Tie-in to the Hubline shall be accomplished in a manner to prevent water and sediments from entering the pipe.
11. The discharges shall not contain materials in concentrations or combinations which are hazardous or toxic to human health or aquatic life of the receiving surface waters.
12. Fluorescein dye may be utilized and discharged for the purpose of hydrostatic testing. The amount of dye used shall not exceed the amount required for the hydrostatic test, nor shall it exceed the dosage recommended by the manufacturer for this purpose.
13. Chemicals (e.g., disinfecting agents, detergents, emulsifiers, etc.) shall not be discharged into waters of the United States without prior approval by the U.S. Environmental Protection Agency (EPA).
14. 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.
15. The permittee shall report the results of sampling for any parameter above its required frequency, in accordance with 40 CFR §122.41(l)(4)(ii).
16. The permittee shall notify EPA in writing within 20 days after any changes in the operations, including the use of chemical additives, at the facility that may have an effect on the permitted discharge of wastewater from the facility.
17. EPA may modify this permit in accordance with EPA regulations in 40 CFR §122.62 and §122.63 to incorporate more stringent effluent limitations, increase the frequency of analyses, or impose additional sampling and analytical requirements.
18. This permit shall be modified, or revoked and reissued to comply with any applicable effluent standard or limitation issued 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:

a. contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or

b. controls any pollutant not limited by this permit.

If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the Act.

19. In addition to any other grounds specified herein, this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharge may cause unreasonable degradation of the marine environment.

20. The discharge shall comply with any applicable regulations, promulgated by the Secretary of the department in which the Coast Guard is operating, that establish specifications for safe transportation, handling, carriage, and storage of pollutants and which are then in effect.

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

    a. 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":

        i. One hundred micrograms per liter (100 μg/l);

        ii. Two hundred micrograms per liter (200 μg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 μg/l) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

        iii. 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

        iv. The level established by the Director in accordance with 40 CFR §122.44(f).

    b. 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":

        i. Five hundred micrograms per liter (500 μg/l);

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

        iii. 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

        iv. The level established by the Director in accordance with 40 CFR §122.44(f).

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. COOLING WATER INTAKE STRUCTURE

1. Shuttle and regasification vessels (SRVs) using the Neptune deepwater port shall be constructed, maintained and operated to ensure that:

    a. Each CWIS is located at least 20 feet below the surface of the water,

    b. cooling water intake systems (including the structure and associated intake pumps) maintain a controlled intake velocity no greater than 0.5 feet per second at all times.

    c. CWISs maintain screen slot openings no greater than 1 inch, and

    d. the SRVs use the closed-loop heat vaporization system to regasify LNG.

2. No regasification vessel that utilizes the Neptune deepwater port may vary from the criteria specified in paragraph I.B.1 above unless the permittee first applies for and obtains a permit modification under 40 C.F.R. § 122.62.

C. COOLING WATER INTAKE MONITORING

1. The permittee shall monitor the potential impact of water withdrawal in accordance with requirements in the monitoring program in Attachment A to this permit. For each calendar year, the permittee shall submit an annual report detailing the results of this monitoring effort no later than March 1 of the following year. This report shall also state the following information for the year: the number of hours in that year during which cooling water was withdrawn from both of the deepwater port's two buoys simultaneously, as described in section I.A.4 footnote 7; the total volume of sea water withdrawal through the cooling water intake structures, as described in section I.A.5; a narrative description of any malfunctions, operator or equipment failures, or unusual events, including natural events, that occurred during the year; for any such malfunction, failure, or unusual event, a detailed description of any unanticipated withdrawals or discharges to waters of the United States that may have occurred as a result of such event; and a description of how, if at all, the facility's operations (including number and duration of Port visits) differed from the plans stated in the FEIS and/or the NPDES permit application, and if so, why. Copies of this report shall be submitted to the address listed in paragraph I.D.3 below, to the following persons, and to such other persons as EPA may designate:

    Phil Colarusso, Ocean & Coastal Unit
    U.S. Environmental Protection Agency
    One Congress Street (COP)
    Boston, MA 02114-2023

    Chris Boelke
    National Marine Fisheries Service
    1 Blackburn Drive
    Gloucester, MA 01930

    and

Leila Hatch
Stellwagen Bank National Marine Sanctuary Office
175 Edward Foster Road
Scituate, MA 02066

D. MONITORING AND REPORTING

1. The permittee shall notify the EPA, 48 hours prior to each regasification vessel's arrival at the port, by calling George Harding, EPA (617-918-1870) or Denny Dart (617-918-1850), or such other persons as EPA may designate. The permittee shall provide transportation for inspectors by appointment, as requested by EPA, from a coastal port location to, and from, the regasification vessel and/or deepwater port.
2. Monitoring results obtained during each calendar month for the monitoring required under Part I.A of this permit shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked **no later than the 15th day of the following month.**
3. Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director at the following address:

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TABLE OF CONTENTS

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. Upset

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 1×10^{-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.

ATTACHMENT A

Operational Monitoring Program for the Neptune Deepwater LNG Port
Massachusetts Bay Offshore Gloucester, MA

1.0 ICHTHYOPLANKTON MONITORING STUDY DESIGN

1.1 STUDY PARAMETERS

The study is designed to collect site-specific data in the immediate port area over a pre-operational period of one year and an operational period of five years on ichthyoplankton diversity and abundance per volume of water at depths where the seawater intakes will be located. During operational period monitoring, additional collections will be made over the entire water column to ensure that impacts to species that exhibit diurnal vertical migrations are fully accounted for. These data will be analyzed in terms of likely impact to Massachusetts Bay fish populations in two ways—by comparing the population per volume withdrawn with the overall Massachusetts Bay volumes at equivalent depths, and by estimating the EA mortality implied by the entrainment.

Study parameters therefore include time of year and abundance by species of all identifiable finfish and lobster eggs and larvae. Densities of ichthyoplankton in the Port (no./1000 m^3) will be multiplied by estimated volume of water withdrawn (m^3) to estimate the number of ichthyoplankton entrained by each vessel.

Mortality rates for early life stages are generally available for the species of interest in the literature. Larval length data obtained during this monitoring program will be examined to evaluate whether they can be used to refine the mortality rates used in the Equivalent Adult modeling conducted for the Environmental Impact Statement for Northeast Gateway

1.2 STUDY LOCATIONS

One general survey area was used to represent the two buoy sites during preconstruction sampling and the same area will be used during operational monitoring as well. The laboratory methods are designed to ensure that appropriate data are available to develop life stage-specific mortality rates for numerically or ecologically important species. Long-term monitoring of ichthyoplankton for power plants with open water intakes, such as Seabrook Nuclear Power Station located in coastal New Hampshire, has demonstrated that spatial differences in the ichthyoplankton populations in the source water body can not be readily detected even with a Before-After Control-Impact (BACI) sampling design because stations well outside the zone of influence of the intake are hydrologically linked to the intake area. Given the circulation patterns in outer Massachusetts Bay, therefore, additional survey areas would provide no greater resolution of the potential impacts of the Neptune vessels.

The sampling location was defined as a polygon encompassing the two licensed buoy locations. Coordinates for the corners of the polygon are:

Corner	Longitude	Latitude
1 NW	70.3624°	42.2940°
2 SW	70.3624°	42.2630°
3 SE	70.3622°	42.2630°
4 NE	70.3622°	42.2940°

2.3 FIELD METHODS

Sampling will be conducted twice monthly and focus on two depth regimes: the depth zone (approximately 20-40 feet) where the intakes are located, and, hence, that is most vulnerable to withdrawal; and the full water column (within about 15 feet of the bottom, consistent with ECOMON protocols). The collection gear will be towed in an oblique manner through the depth zone. Three pseudo-replicate (sequential) samples will be taken in each depth zone (i.e., intake and full water column), each with a target volume of 300 m^3. Sampling will be conducted during daylight hours as well as at night. Night is defined as the period from 2+ hours after sunset to 2+ hours before sunrise. Daylight is defined as 2+ hours after sunrise to 2+ hours before sunset. Additional samples will be collected during the crepuscular period (i.e., the period from 1 hour before to 1 hour after sunrise and sunset), but will only be analyzed if results from the day and night collections are statistically different (e.g., through numerical classification), suggesting a period of significant vertical migration. The total number of samples collected annually is shown in Table 1.

Table 1. Planned Sampling Effort (number of samples) for Neptune Ichthyoplankton Monitoring Program

Diel Period	Number of Samples
Day	144
Night	144
Crepuscular	144**
TOTAL	288**

** totals exclude samples collected during crepuscular period that are to be archived and processed only if necessary.

Collection gear will be a 1.0 m^2 Tucker trawl, or a similar plankton net that can be opened or closed at depth, equipped with a 0.330 mm mesh net and a calibrated flowmeter. The net will be lowered to the target depth in a closed position and then opened with a messenger activating a double trip release mechanism (DTRM). At the end of the approximate 10- minute tow a second messenger will be sent down the wire to close the net. Pre- and post-deployment flowmeter readings will be recorded. The nets will be washed down using filtered seawater and the contents preserved in 5 to 10 percent buffered formalin. Preserved samples will be transported to the Biological Laboratory for analysis.

A detailed field log will be maintained by the Chief Scientist during each survey. All station locations (starting point of tow) will be recorded using GPS. Water depth, bottom depth for full water column tows, and tidal stage will be recorded. Samples will be logged on standard chain-of-custody forms that will accompany the samples to the laboratory. The permittee may, at its option and with the agreement of Northeast Gateway, LLC, share crepuscular period samples with Northeast Gateway, LLC, at the midpoint between their respective deepwater port locations. However, the preceding sentence shall not be construed to impose any obligations on Northeast Gateway, LLC, nor to affect in any way Northeast Gateway's obligations under its own NPDES Permit No. MA0040266, nor to diminish or relieve in any way the permittee's obligation to satisfy all requirements of this permit.

2.4 LABORATORY METHODS

All samples collected during daytime and nighttime periods will be processed in the laboratory. Samples collected during the crepuscular periods will be archived until the data analyst determines whether it would be necessary to analyze them. In the laboratory, all eggs and larvae will be identified to the lowest practical taxon. Subsampling will be allowed so that a minimum of 200 eggs and 100 larvae are identified. For eggs it may be necessary to group some taxa such as Labridae/yellowtail flounder, and hake/fourbeard rockling due to similarities in morphology and spawning season. Larvae are typically identified to the species level. For species that have clearly defined larval life stages (e.g., yolk sac, post-yolk sac, etc.), individuals will be assigned to the appropriate life stage. During the permitting process, 12 species of commercial or ecological importance (Table 2) were identified for impact assessment using Equivalent Adult Loss modeling techniques. Laboratory analysis will include length measurement to the nearest 0.5 mm will be made for these species, and any other abundant species, because length is a necessary parameter for estimating mortality rates for larvae. In addition, if lobster larvae are present in the samples, they will be enumerated by life stage.

Table 2. Fish species for which the Port area has been designated Essential Fish Habitat for larvae.

Common Name	Scientific Name
Atlantic cod	*Gadus morhua*
Atlantic herring	*Clupea harengus*
Atlantic mackerel	*Scomer scombrus*
Butterfish	*Peprilus triacanthus*
Cunner	*Tautogolabrus adspersus*
Haddock	*Melanogrammus aeglefinus*
Hake	*Urophycis* spp.
Pollock	*Pollachius virens*
Sand lance	*Ammodytes* spp.
Silver hake	*Merluccius bilinearis*
Winter flounder	*Pseudopleuronectes americanus*
Yellowtail flounder	*Limanda ferruginea*

Neptune shall provide a detailed QA/QC program for review and approval by EPA and NMFS.

2.5 DATA ANALYSIS

2.5.1 Community Structure

Density of eggs and larvae will be presented as twice-monthly mean abundances (no./1000 m^3). Seasonal patterns will be described using numerical classification techniques. Life history of common species will be discussed in reference to Port construction and operation.

2.5.2 Entrainment Impacts

Twice-monthly mean abundances will be used to calculate the number of individuals (by species, life stage, and size class) that are vulnerable to entrainment by multiplying abundance by intake volume. To place these numbers in perspective, however, it is important to account for the

naturally high mortality rates experienced by early life stages of marine organisms. With knowledge of life stage-specific mortality rates for individual species, entrainment losses can be converted to Equivalent Adult losses. The term Equivalent Adults reflects the number of fish that would survive to adulthood (at a defined age) assuming natural mortality rates.

Length measurements obtained during sample analysis will be used to develop regressions of density versus length with the slope of this line representing the mortality rate. If the site-specific samples do not provide sufficient data to estimate mortality rates for each species, values will be derived from the literature.

Ichthyoplankton abundance data will be used to estimate the reduction in reproductive age fish populations caused by entrainment of fish eggs and larvae by Neptune. It will be assumed that 100% of the organisms entrained in the vessel will be killed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

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 NUMBER: MA0040258

NAME AND MAILING ADDRESS OF APPLICANTS:

Neptune LNG LLC
1 Liberty Square, 10th Floor
Boston, MA 02109

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Neptune Deepwater Port
Outer Continental Shelf Blocks NK 19-04 6525 and NK 19-04 6575
Massachusetts Bay, North Atlantic Planning Area

RECEIVING WATER(S):

Massachusetts Bay

SIC CODE:4491 Marine Cargo (Liquefied Natural Gas) Handling Offshore Terminal

Table of Contents

1.0 Proposed Action, Type of Facility, and Discharge Location

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for the issuance of a NPDES permit to withdraw sea water from Massachusetts Bay and discharge storm water, firewater, cooling water and hydrostatic test water into the Massachusetts Bay.

The seawater withdrawal and discharge are the result of the construction and operation of a new offshore liquefied natural gas (LNG) terminal in federal waters of Massachusetts Bay. New pipelines will facilitate the delivery of regasified liquefied natural gas (LNG) from the Northeast Port to onshore markets in New England. Specifically designed ships containing LNG will deliver regasified natural gas into the new gas pipeline via the new offshore terminal. The new pipeline will be connected to the existing offshore and land based natural gas distribution system. The new LNG terminal will be a deepwater port, named Neptune, located in federal waters in the eastern side of Massachusetts Bay in Office of Coast Survey (OCS) blocks NK 19-04 6525 and NL 19-04 6575, approximately 22 miles northeast of Boston in a water depth of approximately 260 feet. Figure 1 shows the location of the deepwater port and transmission lines.

1.1 Port Operation

The LNG deepwater port will consist of two unloading buoy systems (referred to as "A" and "B" on figures and in draft permit) in a water depth of approximately 260 feet, eight wire rope and chain mooring lines connecting each unloading buoy to anchor points on the seabed, eight suction pile anchor points, one flexible riser from the pipeline to each buoy, riser manifolds, approximately 2.3 miles of natural gas flowline connecting the two buoy systems, a 10.9 mile long, 24-inch natural gas transmission line connecting the port to the existing "Hubline" offshore natural gas line, a transition manifold, hot tap and connecting pipe tying into the Hubline. A schematic of the Neptune LNG deepwater port is shown in Figure 2.

During the vaporization of LNG and distribution of natural gas to the pipeline, up to two LNG shuttle and regasification vessels (SRVs), each with a capacity of approximately 150,000 cubic meters (m^3), will temporarily moor at the deepwater port by means of a submerged unloading buoy system. Two unloading buoys will each moor one SRV on location throughout the unloading cycle by means of mooring lines and anchor points located on the seabed. Two unloading buoys at the port will allow natural gas to be delivered in a continuous flow, without interruption, by having brief overlap between arriving and departing SRVs. As the first SRV moored at the deepwater port finishes unloading, a second SRV (following its transit from an overseas loading point) will moor at the deepwater port. After all of its LNG has been vaporized and unloaded, the first SRV will disconnect from the unloading buoy and proceed to an overseas loading point to reload. In the meantime, a third LNG carrier, already in transit to the deepwater port will repeat the cycle. This sequence will provide the operational flexibility to allow uninterrupted delivery of natural gas using three or more SRVs.

1.2 LNG Regasification

LNG is natural gas that has been cooled to about minus 260ºF for efficient shipment and storage as a liquid. LNG is more compact that the gaseous equivalent, with a volumetric differential of about 610 to 1. LNG can be transported long distances across oceans using specially designed ships, thus allowing access to stranded reserves that cannot be transported by conventional

pipelines.

The SRVs will be equipped to store, transport and vaporize LNG, and to odorize and meter natural gas that will then be sent out through new and existing conventional subsea pipelines. Each double hulled SRV will have insulated LNG storage tanks within its inner hull. Each tank will be equipped with an in-tank pump to circulate and transfer LNG, at a temperature of -256 ºF, to the vaporization facilities on the deck of the SRV.

The onboard vaporization systems will have a capacity of approximately 750 million standard cubic feet per day (MMscfd) and consist of three individual vaporization units with capacity to vaporize 250 MMscfd each by raising the temperature of the LNG to at least 32ºF. Under normal operation, two units will be in service with a combined maximum sendout capacity of 500 MMscfd. The third vaporization unit will be on standby mode. The vaporization system will have the capacity to empty the 150,000 m^3 vessel in four to eight days.

The LNG will be heated in a two-step closed loop system. In the first step, a water-glycol solution will be heated in a compact printed circuit heat exchanger (PCHE) by steam produced in two marine auxiliary boilers. In the second step, the warmer water-glycol solution will heat the LNG in a shell and tube heat exchanger. Figure 3 shows the process flow diagram for the closed-loop vaporization system.

As the LNG is vaporized and offloaded through the pipelines, the double bottoms and double sides of the SRV will be ballasted (filled with sea water) to maintain the proper buoyancy and stability of the vessel. The ballast water will also be recirculated for cooling the boilers used for regasification, as described above. No ballast/cooling water will be discharged.

Two unloading buoys will be utilized so that natural gas can be delivered in a continuous flow, without interruption, by having an approximately 9-hour overlap between arriving and departing SRVs.

1.3 Pipeline Lateral and Flowline Construction

The construction project includes the installation of 10.9 miles of 24-inch natural gas transmission line, known as the Pipeline Lateral, to connect the Neptune deepwater port to the existing 30-inch natural gas Hubline in Massachusetts Bay. Within the deepwater port, 2.5 miles of 24-inch natural gas transmission line will be used to connect the two unloading buoy systems. The transmission line within the port is known as the Flowline. Figure 1 depicts the layout of existing and new gas transmission lines.

Filtered seawater will be used following construction of the pipeline to ensure pipeline integrity. These activities involve internal cleaning and hydrostatic testing as follows:

- Internal Cleaning – Although care will be taken during fabrication and installation, minimal amounts of debris may be left in the pipeline. The pipe will first be flooded prior to gauging to remove any foreign material left in the pipeline. Each section of the pipeline will then be internally cleaned using a brush pig. Following cleaning, a pressure propelled measuring device, known as a gauging pipe, will be passed through the pipes to ensure that they meet minimum dimensions and to identify excessively out-of-round pipe, dents, projections or other obstructions.
- Hydrostatic Testing – Upon acceptance of the gauge pig run, the pipes will be flooded again with filtered seawater and fluorescent dye. The hydrostatic test will be

conducted at a minimum pressure of 1.25 times the maximum allowable operating pressure and for a minimum duration of 8 hours.

1.4 Deepwater Port and Vessel Commissioning

The initial commissioning of the port infrastructure and each SRV will require non-routine seawater cooling water intake and discharges to keep the vessel power generation systems operating while the vessel is idling at the port. The commissioning activities generally will include the docking connection to the buoy, testing of equipment and controls (i.e. valves and pipeline integrity) and safety systems, re-gasification skid performance testing, and stack emission compliance testing. Neptune anticipates that these commissioning functions should be completed in a 20 day period for each SRV calling on the port. Neptune has written into its charter agreement that the vessel operator has three attempts to meet the SRV re-gas performance specifications and pass the acceptance test. (Vessel sea trials will have been completed before and vessel arrives at the port to begin the deepwater port commissioning phase).

In a worst case scenario, each vessel would require 40 days (20 day initial regas test, 10 day second, and 10 day final) to complete its commissioning functions. In addition, the emission compliance test would be conducted following the regasification system commissioning which could take an additional 5 days per vessel, depending on weather and logistics. Neptune seeks a total of 45 days to discharge on the buoy during commissioning/testing for each vessel. It is likely that this would not be 45 days continuous time on the buoy as the vessel would likely leave for modifications/repair before attempting the acceptance tests for a second or third time. Should the commissioning go as planned, both buoys and subsea infrastructure would be commissioned with the first SRV cargo.

2.0 Description of Intakes

2.1 Ballast/Engine Cooling Water and Condensate Cooling Water

Each SRV's power plant will use four dual fuel diesel engines, one producing 5.7 MW and three producing 11.4 MW. Two 11.4-MW engines would be used for electric power generation when the SRV is moored. One 11.4-MW and one 5.7-MW engine will be needed for propulsion and electrical power generation when the SRV is underway. Propulsion will be provided by a single-screw driven by twin electric motors.

The dual-fuel diesel engines will burn 99 percent natural gas and 1 percent marine diesel as pilot fuel. The SRVs will use two low-pressure marine auxiliary boilers each rated at about 282 MMBtu per hour. These will be designed to operate on cargo boil-off gas and vaporized LNG. The steam will be supplied to the cargo vaporization units.

SRV will have a high and a low seawater intake chests (sea chests). Each sea chest will be have 33.7square feet of open area. The low sea chest will be located near the bottom of the vessel's hull in a near horizontal plane (due to the curvature in the hull) with the centerline of the sea chest approximately 33 feet below the water surface. The high chest will lie in a near vertical plane with it's centerline approximately 8 feet above the low sea chest. To minimize entrainment of marine organisms, each sea chest will contain screen openings that are approximately 1 inch by 12 inches. At the design LNG regasifying rate, intake velocity will be 0.11 ft/s. Allowing for practical cargo ballast operations in all conditions, intake velocity will be

approximately 0.38 ft/s. In all cases, with the exception of when the fire pumps are on, the intake velocity will be below 0.5 ft/s.

The flow rate at the open sea chest will be 2.25 million gallons per day (MGD) for each SRV. Only one of the two sea chests will be opened when the SRV is at the buoy. The second sea chest will be used at the buoy only during emergencies to supplement ballast water or the firewater system. During normal operation, the total volume will be diverted to the ballast tanks. Engine cooling water will be supplied directly by re-circulated ballast water.

It is expected that when the port is operating at maximum capacity, the port will be operating continuously with one SRV arriving and beginning regasification as another is finishing up and preparing to depart the port. This overlap is expected to occur for approximately 9 hours every six days. Therefore, while the maximum daily intake from each buoy will be 2.25 MGD, the total annual intake at each buoy is 437 million gallons, or an average monthly intake of 1.2 MGD.

2.1.1 Deepwater Port and Vessel Commissioning

Seawater intake during commissioning has been estimated to average about 8.2 MGD with flow rates as high as 13,900 gpm for up to 1 hour if the auxiliary steam dump condenser is needed. Although the steam dump condenser is not expected to operate often, it is required to reject heat when the marine boilers must remain operating and the regas skid is temporarily shutdown (this may occur during short shutdowns of the regas skids during commissioning or during stack emission testing at low gas sendout flows). Seawater will be used to supply the central freshwater coolers and dump condenser and freshwater generators. Seawater will be withdrawn from both the upper and lower sea chests; and the intake velocities at both sea chests will be below 0.5 feet per second.

2.2 Fire Water

The testing of the fire response system, which utilizes seawater, occurs every two weeks when the vessel is on a voyage. When the SRV is at the buoy, the fire system will be tested approximately four times per year, or as requested by the Coast Guard.

There will be two fire pumps with a combined capacity of 317,004 gallons per hour (gph) to draw down seawater from the sea chests in the event of a fire.

During the testing of the fire system if water is drawn from the same sea chest as the ballast water; the intake velocity will increase from the normal 0.11 ft/s to approximately 0.45 ft/s. If it is drawn by opening the other sea chest as well, the intake velocity in both chests will be approximately 0.23 ft/s.

2.3 Emergency Ballast Water

During an emergency requiring rapid off-loading of cargo, additional ballast water will be required for distribution of cargo and ballast water. Additional ballast water will be taken by either opening the closed sea chest in addition to the one already open, or by drawing extra water from the already open one. There will be three identical pumps rated to 660,400 gph dedicated to emergency ballast water. Only two of the pumps will be used simultaneously. The applicant estimates that usage during an emergency event would be to use two of the pumps continuously for up to three hours. The probable total peak water intake would be approximately 3.96 million

gallons per event.

If the closed sea chest is opened when taking in additional ballast water, the intake velocity in both chests will be approximately 0.9 ft/s. In case the additional ballast water is drawn without opening the other chest, then the intake velocity will increase to approximately 1.8 ft/s for up to three hours per event.

3.0 Description of Discharges

3.1 Storm Water

Precipitation runoff from each SRV deck, outside the utility areas, is routed to outlets on the sides of the SRVs. Storm water discharge for each SRV is estimated to average 8,700 gallons per day (gpd) from the deck area, based on 30-year average rainfall. On days when incoming and outgoing vessels overlap at the port, total discharge would average 11,900 gallons per day (assuming a 9 hour overlap). The peak daily rainfall is estimated at 0.6 MGD for a single vessel and 0.8 MGD when vessels overlap.

Rainwater and oil from the utility areas that include power generation, boil-off gas compressor, emergency diesel generator, diesel tank, and diesel loading areas where there is a potential for the presence of petroleum hydrocarbons will be contained in drain or drip pans. A set of four drain pans will be located in the steering flat and another set of four drain pans will be located in the forecastle. The drain pans will collect rainwater, machine washdown water and any drips or spills from the equipment in the vicinity. The water in the drain pans will be collected and diverted to storage tanks. The water will be treated and discharged when the SRV is in transit outside U.S. waters. The draft permit includes a narrative best management practice prohibiting the discharge of rainwater from the utility area drain pans.

3.2 Firewater

During the testing or use of the fire extinguishing system, the seawater used in the system will be discharged at an average rate of 300,000 gallons per hour. The firewater will be discharged at multiple outfalls throughout the facility through the fire protection system and the system bypass.

The testing of the fire system will require a water discharge of 80,000 gallons over a 15 minute period. While at sea, the fire system must be tested approximately every 2 weeks. When the vessel is at the buoy, the fire system will be tested approximately four times per year.

No specific effluent limits are provided for discharge generated from testing the fire system at the buoy.

3.3 Pipe Flushing and Hydrostatic Test Water - Outfall 003

Outfall 003 consists of discharges resulting from cleaning and testing the transmission line (10.9 miles) and flowline (2.5 miles). During construction, the pipes will be filled twice with seawater. The first filling is to flush and scrub the pipes which will be filtered through bag filters topside prior to discharge. No chemicals will be added to the first filling. The line will then be filled a second time with dye in filtered seawater and then hydrostatically tested. After the hydrostatic test is complete, the water will be filtered again and discharged to the bay.

No chemicals will be added to the pipeline except for fluorescent dye (Champion Servo

Fluorescein Liquid Dye) which will be used to assist divers in leak detection during hydrostatic testing. The dye will be added to the water at an average concentration of 450 parts per million (ppm). Fluorescein liquid dye is non-toxic to aquatic life and humans and is used in medical procedures (including opthhalmology to reveal corneal lesions) and as a tracer in marine environments.

At no time will the filled pipe be left open. Tie-in to the hubline will be accomplished using specialized valves at the ends of pipe to prevent water/sediments from entering the pipe.

3.4 Deepwater Port and Vessel Commissioning Cooling Water - Outfalls 04A and 04B

As described in Section 2.1.1 above, seawater intake during commissioning has been estimated to average about 8.2 MGD with flow rates as high as 13,900 gpm during short discrete periods if the steam dump condenser is in operation.

The cooling water discharge is at the bottom of the vessel (about 37 feet below the waterline). The cooling water discharge flow from the central freshwater coolers will average 8.2 MGD and the temperature differential will be 5 to 8ºC. If the steam dump is required, the temperature differential could rise to as high as 10ºC, up to one hour

4.0 Environmental Review under the National Environmental Policy Act

Section 511(c)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1371(c)(1), expressly provides that EPA issuance of an NPDES permit under CWA § 402, 33 U.S.C. § 1341, to a facility that is a "new source" under CWA § 306, 33 U.S.C. § 1316, is one of only two types of EPA actions under the CWA that are subject to review under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321, *et seq.* Where such an action is determined to be a major federal action significantly affecting the quality of the human environment, NEPA requires that the federal agency or agencies proposing, major federal actions significantly affecting the quality of the human environment to first complete an "environmental impact statement" (EIS) evaluating the proposed action, reasonable alternatives to it and the environmental effects of the proposed and alternative actions. *See* 40 C.F.R. Part 1502. EPA regulations at 40 C.F.R. Part 6, Subparts A, B, D, and F also address the preparation of EISs in conjunction with EPA proposals to issue NPDES permits to new sources.

The Deepwater Port Act (DPA), 33 U.S.C. §§ 1501 *et seq.*, specifies that deepwater ports shall be considered "new sources" under the CWA. *See* 33 U.S.C. § 1502(9)(D). As a result, by operation of the DPA, NEPA applies to EPA's proposal to issue an NDPES permit to the NEPTUNE deepwater port. At the same time, the DPA also specifies that:

> [f]or all [Deepwater Port Act license] applications, the Secretary [of Transportation], in cooperation with other involved Federal Agencies and departments, shall comply with the National Environmental Policy Act of 1969 (42 U.S.C. 4332). Such compliance shall fulfill the requirement of all Federal agencies in carrying out their responsibilities under the National Environmental Policy Act pursuant to this Act.

33 U.S.C. § 1504(f). Consistent with this provision of the DPA, the United States Coast Guard (USCG) and the United States Maritime Administration (MARAD) served as lead agencies preparing an EIS to satisfy NEPA, and EPA (and other agencies) cooperated with the USCG and

MARAD in the preparation of the EIS. *See* USCG's Draft and Final EISs for the Neptune LLC Liquefied Natural Gas Deepwater Port License Application. Also consistent with the DPA, this EIS satisfies EPA's NEPA obligations with respect to issuance of this NPDES permit.

The EIS includes detailed discussion of the proposed project and alternatives considered to it. Many aspects of the project are discussed in the EIS, including pollutant discharges and cooling water withdrawals. This fact sheet provides additional discussion focused specifically on aspects of the proposed facility that are subject to regulation under the NPDES permit.

5.0 Limitations and Conditions

The limits on pollutant discharges and cooling water withdrawals, as well as the monitoring requirements, proposed by EPA for the Port may be found in the draft NPDES permit. The basis for these requirements is discussed below.

6.0 Permit Basis: Statutory and Regulatory Authority

6.1 Permit Requirements, Generally

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without authorization by a National Pollutant Discharge Elimination System (NPDES) permit, unless the discharge is otherwise authorized by the CWA. Technology-based and water quality-based effluent limitations and other requirements, including monitoring and reporting, are typically implemented by including them in NPDES permits issued to specific facilities. *See* 33 U.S.C. §§ 1311(a) and (b), 1313, 1318(a), 1326(b), 1341, 1342, 1343. The draft NPDES permit here was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136. For this permit, EPA considered technology-based and water quality-based requirements under the CWA, including the CWA's Ocean Discharge Criteria. In addition, EPA considered any requirements that might arise out of any applicable statutes in addition to the CWA.

6.2 Technology Based Requirements

Technology-based effluent limits represent the minimum level of pollutant discharge control that dischargers must achieve under the CWA. The CWA requires that different types of pollutant discharges be controlled to levels that reflect the capability of certain technological measures. These technology standards vary depending on the type of pollutant and facility in question. *See* 33 U.S.C. §§ 1311(b), 1314, 1316; 40 C.F.R. § 125.3. Sections 301(b) and 306 of the CWA and 40 CFR Part 125 Subpart A require that pollutant discharges be reduced to a level equivalent to using the best practicable control technology currently available (BPT), best conventional control technology (BCT) for conventional pollutants, the best available technology economically available (BAT) for toxics and non-conventional pollutants, and the best available demonstrated control technology (BADCT) for discharges from "new sources," as defined under the CWA. *See* 33 U.S.C. §§ 1316(a); 40 C.F.R. §§ 122.2, 122.29. BAT limits are also supposed to "result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants." 33 U.S.C. § 1311(b)(2)(A). These technology-based requirements are then to be reflected in NPDES permits issued to specific facilities. *See* 33 U.S.C. §§ 1311, 1316, 1342(a); 40 C.F.R. §§ 122.29, 125.3. Any applicable new source performance standards must be met

when the new source commences operations. *See* 40 C.F.R. § 122.29(d)(4) and (5). Compliance schedules and deadlines not in accordance with the statutory deadlines of the CWA cannot be authorized by a NPDES permit.

EPA regulations found at 40 C.F.R. Part 125, Subpart A, set forth procedures, standards and criteria for the development and imposition of technology-based requirements in NPDES permits under Section 301(b) of the CWA, including the application of EPA-promulgated National Effluent Guidelines (NEGs) (i.e., technology-based effluent limitations developed for entire industrial categories which are then applied to specific facilities through NPDES permits) and, when no relevant NEGs are in effect, the development of case-by-case, Best Professional Judgment (BPJ) determinations of technology-based discharge limits under Section 402(a)(1) of the CWA. *See* 40 C.F.R. § 125.3.

EPA has not promulgated technology-based NEGs for pollutant discharges from LNG deepwater ports or any other type of deepwater port. In addition, EPA has not promulgated any new source performance standards for deepwater ports. Therefore, all technology-based effluent limits for the Port's NPDES permit have been developed on a case-by-case, BPJ basis, as discussed further below.

6.3 Ocean Discharge Criteria under CWA § 403

Point source pollutant discharges to marine waters are subject to the Ocean Discharge Criteria (ODC) under Section 403 of the Clean Water Act (CWA). 33 U.S.C. § 1343. The ODC apply to NPDES permits for pollutant discharges into the territorial seas, the contiguous zone and the ocean. EPA has promulgated guidelines for regulating discharges to satisfy CWA section 403 and give effect to the ODC. *See* 40 C.F.R. Part 125, Subpart M.

EPA conducts an Ocean Discharge Criteria Evaluation (ODCE) using the guidelines in 40 C.F.R. Part 125, Subpart M to determine whether and the extent that the discharge will cause degradation of the marine environment. 40 C.F.R. 125.122(a). EPA may not issue an NPDES permit to authorize any pollutant discharge that the Agency determines will cause "unreasonable degradation of the marine environment." 40 C.F.R. 125.123(b). The ODC defines "unreasonable degradation of the marine environment" to mean:

- Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
- Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
- Loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

See 40 C.F.R. 125.121(e). CWA Section 403(c) guidelines require that a number of factors be considered in the determination of degradation. These factors include the amount and nature of the pollutants, the potential transport of the pollutants, the character and uses of the receiving water and its biological communities, the impacts on recreational and commercial fishing, the existence of special aquatic sites (including parks, refuges, etc.), any applicable requirements of an approved Coastal Zone Management plan, marine water quality criteria developed by EPA

pursuant to CWA Section 304(a)(1), and potential impacts on water quality, ecological health and human health.[1] See CWA 403(c)(1), 33 U.S.C. § 1343(c)(1); 40 C.F.R. § 125.122(a). EPA may include limits in NPDES permits in order to ensure that discharges will not result in unreasonable degradation of the marine environment and, as stated above, discharges that would cause such unreasonable degradation may not be permitted. 40 C.F.R. §§ 125.123(a) and (b). If EPA has insufficient information to determine prior to permit issuance that there will be no unreasonable degradation of the marine environment, the Agency may not issue the permit unless, among other requirements, it finds that such discharge will not cause irreparable harm. 40 C.F.R. § 125.123(c)

6.4 Section 316(b) of the Clean Water Act

CWA Section 316(b), 33 U.S.C. § 1326(b), imposes a technology standard for cooling water intake structures (CWISs) at facilities with pollutant discharges subject to NPDES permitting, where the CWIS will withdraw cooling water from the waters of the United States. CWA Section 316(b) requires "that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact" (BTA). 33 U.S.C. § 1326(b). As with technology standards for effluent discharges, EPA imposes conditions in NPDES permits to ensure that the technology standard for CWISs is met at individual facilities.

In December 2001, EPA promulgated a regulation to implement a first phase of performance standards under CWA Section 316(b). *See* 40 C.F.R. Part 125, Subpart I; 66 Fed. Reg. 65338 (Dec. 18, 2001) (Final Phase I Rule). The Phase I Rule set national performance standards for CWISs at "new facilities," as defined in the regulations, that are subject to the Rule. An April 22, 2004, memorandum from EPA's Office of Water to EPA Regions and the National Oceanic and Atmospheric Administration (NOAA), confirms that CWISs at offshore LNG terminals with NPDES permits would be subject to CWA Section 316(b)'s BTA standard, but also directs that such limits should be developed on a case-by-case, BPJ basis, rather than the Phase I regulations. The memorandum explains that EPA's Phase I regulations for new facilities with cooling water intake structures did not contemplate, and were not intended to be applied to, offshore facilities of this type. While the memorandum also noted that it was possible that EPA's then as yet-to-be-developed Phase III Rule under CWA Section 316(b) might provide national categorical standards applicable to offshore LNG import terminals, EPA later issued the Phase III Rule and decided not to promulgate national standards for this type of facility and to leave permit limit development under Section 316(b) for these facilities to the case-by-case, BPJ process. *See* 40 C.F.R. §§ 125.131(d), 125.133; 71 Fed. Reg. 35008 (June 16, 2006) (Final Phase III Rule). *See also* 40 C.F.R. §§ 401.14.

The operation of CWISs can cause or contribute to a variety of adverse environmental effects, such as killing or injuring fish larvae and eggs by entraining them in the water withdrawn from a water body and sent through the facility's cooling system, or by killing or injuring fish and other organisms by impinging them against the intake structure's screens, racks, or other structures. CWA Section 316(b) applies to this permit due to the presence and operation of CWISs on the

[1] The EPA National Recommended Water Quality Criteria, 2006, contain applicable water quality criteria for marine discharges.

SRVs, specifically, the sea chests when the SRVs are interconnected with the STL buoys and integrated within the Port.

7.0 Derivation of Effluent Limits

7.1 Derivation of Effluent Limits for Pipe Flushing and Hydrostatic Test Water - Outfall 003

7.1.1 Flow

The total volume of treated effluent is restricted in the draft permit to that volume of flow required to fill each pipe twice. The maximum flow of 2,101 gpm may be estimated using pump capacity and hours of operation. A total of 3 million gallons of water will be intermittently discharged to federal waters.

7.1.2 Total Suspended Solids (TSS)

Since there are no National Effluent Guidelines (NEGs) promulgated for discharges associated with the construction of gas pipelines, the permit writer is authorized under Section 402(a)(1) of the CWA to establish effluent limitations on a case-by-case basis using Best Professional Judgement (BPJ). Since the pipeline flood/hydrostatic test water may contain particles of debris removed from the pipe during the cleaning process, the draft permit includes an effluent limit for total suspended solids.

Although there are no National Water Quality Criteria for suspended solids, EPA has indirectly issued guidance in the Multi-Sector General Permit for Industrial Activities (MSGP) (Federal Register/Vol 65 No 210/Monday, October 20, 2000/pp 64766-7). The MSGP includes a benchmark of 100 mg/l for TSS. The fact sheet for the MSGP states: "The benchmarks are also viewed by EPA as a level that, if below, a facility presents little potential for water quality concern." EPA is not aware of any information suggesting a contrary conclusion here.

The permittee indicates that with the filtration of flood/hydrostatic test water through a 0.5µ bag filter prior to discharge, the permittee can meet a TSS effluent limit of 100 mg/L. EPA has not found any treatability data from hydrostatic testing and flushing (with scouring) of new submerged pipelines that recommend more effective available treatment technologies. This effluent limit is consistent with effluent limits for TSS that have been set for similar activities in New England.

Based on BPJ, the draft permit includes an effluent limit of 100 mg/l for TSS.

7.1.3 Fluorescein Dye

Fluorescein dye is not toxic to human or aquatic life, and its use is not expected to otherwise impact health, ecological, or aesthetic aspects of water quality. Consequently, there is no reasonable potential for water quality standards or criteria to be violated.

Under the circumstances, Best Available Technology is a requirement directing the permittee utilize and discharge only that amount of dye required for the hydrostatic test and at the dosages recommended by the manufacturer or less.

Because there is no reasonable potential for water quality standards or criteria to be violated and

the Best Available Technology under the circumstances does not involve treatment, the permit does not contain numeric effluent limits for this discharge.

7.2 Derivation of Effluent Limits for Deepwater Port and Vessel Commissioning Cooling Water - Outfalls 04A and 04B

7.2.1 Flow

The discharge of non-contact cooling water during commissioning is limited to an average flow of 8.2 MGD for a maximum of 45 days per vessel. This flow represents the minimal flow to operate the vessel while idling at the port prior to the initiation of regasification of the vessels first cargo of LNG. This flow is a required first step to the use of closed-loop, shell and tube vaporization which, over the long term will result in no cooling water discharges when the vessel is at the port.

7.2.2 Temperature

7.2.2.1 Technology-based limits

Heat is a non-conventional pollutant subject to the BAT standard under the CWA.[2] Because there are neither ELGs nor new source performance standards for thermal discharge from deepwater LNG regasification port facilities, EPA determines the BAT technology-based standards for pollutant discharges from such facilities on a case-by-case, BPJ basis.[3] When imposing BAT limits using BPJ, a permit writer applies the statutory BAT factors, 33 U.S.C. § 1314(b)(2)(B), and the factors specified in 40 C.F.R. § 125.3(d)(3), and considers both the "appropriate technology for the category of point sources of which the applicant is a member, based on all available information," and "any unique factors relating to the applicant."[4] The factors considered under 40 C.F.R. 125.3(d)(3) are the age of the equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process change, the cost of achieving effluent reduction, and non-water quality environmental impact (including energy requirements).[5]

EPA developed the thermal discharge limits in the Draft permit based on the discharge volumes and temperature change (or "delta-T") values specified above in order to satisfy the BAT standard on a BPJ basis. As stated above, BAT limits should "result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants." Alternative LNG regasification technologies were evaluated in the FEIS for the Neptune deepwater port. In addition to the shell and tube closed loop vaporization system (STV) proposed by the applicant, the FEIS considered closed loop submerged combustion vaporization, open loop vaporizers which use surrounding seawater to warm the LNG, and air vaporize which use the surrounding

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[2] *See* 33 U.S.C. §§ 1311(b)(2), 1314(a)(4), 1362(6); 40 C.F.R. §§ 125.3(a)(2)(v).

[3] *See* 33 U.S.C. §§ 1342(a)(1)(B) and 1316; 40 C.F.R. § 125.3. *See also* April 3, 2006, Memorandum from Benjamin H. Grumbles, EPA Assistant Administrator for Water, to EPA Regional Administrators, "Subject: Deepwater Liquefied Natural Gas Terminals and Clean Water Act Technology-Based Limitations and Conditions."

[4] *See also* 40 C.F.R. § 125.3(c)(2).

[5] *See also* 33 U.S.C. § 1314(b)(2)(B).

air to warm the LNG.[6] These alternatives were evaluated based on the BAT factors listed above, including consideration of the engineering feasibility, the environmental effects of the technologies (including temperature impact on the marine environment) and whether the technologies being considered were proven.

The closed loop STV system was identified as the alternative resulting in the least thermal discharge and smallest thermal impact on the Massachusetts Bay marine environment.[7] The closed loop STV system involves two operational phases: (1) a one-time commissioning process for each regasification vessel, and (2) operations thereafter. There are no thermal discharges associated with operating the regasification vessels at the buoys following the initial commissioning period. However, in its NPDES permit application, Neptune has requested permission to discharge non-contact cooling water from outfalls 04A and 04B at temperatures for the limited amount of time necessary to complete final field testing (commissioning) for new SRVs. These discharges are required to keep the vessel operating (but not regasifying) during the commissioning process. EPA concludes that these commissioning discharges are a (to some extent unavoidable) aspect of the STV system, which is, overall, the BAT for off-shore regasification and which, over the long term, results in no thermal discharges.

Therefore, EPA concludes that the closed loop STV system represents the BAT for Neptune and has developed effluent limits in the draft permit that are based on the operation of that system. Those limits are: permission to discharge non-contact cooling water with a maximum daily flow of 8.2 MGD, a maximum per-minute flow of 13,900 gallons per minute, a maximum daily temperature rise of 8º C, and a maximum instantaneous temperature rise of 10º C. EPA also concludes, based on the information discussed in the EIS and Neptune's NPDES permit application, that the effluent temperature limits in the draft permit are technologically and economically feasible for Neptune and that any potentially negative non-water environmental or energy effects that might result from taking these steps would be inconsequential and should not stand in the way of imposing these limits.

7.2.2.2 Water quality-based limits

As discussed above, EPA has also applied the Ocean Discharge Criteria (ODC) under CWA Section 403 in setting the permit's thermal discharge limits. Under 40 C.F.R. 125.123(b), EPA may not issue an NPDES permit if it determines the effects of a discharge to the ocean will cause "unreasonable degradation" to the marine environment as defined in 40 CFR 125.121(e).

If EPA determines that "unreasonable degradation" will not occur, then it may issue a discharge permit. The permit may be conditioned as necessary to assure that the discharge will not cause unreasonable degradation of the marine environment (40 C.F.R. 125.123(a)). In determining whether a discharge may cause unreasonable degradation of the marine environment, any applicable EPA marine water quality criteria are among the factors to be considered. EPA issued guidelines for assuring protection of marine aquatic life from the thermal discharges in the Quality Criteria for Water 1986, otherwise known as the "Gold Book" (EPA, 1986). The Water Quality Criteria state that:

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[6] US Coast Guard, *Neptune LNG Deepwater Port Final Environmental Impact Statement and Environmental Impact Report Volume I: Impact Analysis, page 2-22.*

[7] US Coast Guard, *Neptune LNG Deepwater Port Final Environmental Impact Statement and Environmental Impact Report Volume I: Impact Analysis, page 2-23.*

In order to assure protection of the characteristic indigenous marine community of a water body segment from adverse thermal effects:

a. the maximum acceptable increase in the weekly average temperature resulting from artificial sources is 1ºC (1.8 F) during all seasons of the year, providing the summer maxima are not exceeded; and

b. daily temperature cycles characteristic of the water body segment should not be altered in either amplitude or frequency.

Summer thermal maxima, which define the upper thermal limits for the communities of the discharge area, should be established on a site specific basis.

As noted above, once each vessel is commissioned, it will operate in a closed-loop mode and will not require any thermal discharges. Therefore, only the commissioning discharges need to be analyzed in light of the ODC.

The temperature of commissioning discharges are expected to average 5ºC (9ºF) warmer than the ambient seawater. Although Neptune does not plan use its auxilliary steam condensers during vessel commissioning, if due to other equipment failure, use of the steam condensers becomes necessary, "steam dumps" from these condensers may occur. Steam dumps would increase the discharge flow from an average 5,700 gpm to 13,900 gpm and the discharge water temperature rise from 8ºC to 10ºC warmer than ambient seawater for up to one hour.

EPA has substantial experience with larger cooling water discharge flows at power plants and similar facilities in coastal waters in New England. Based on the volume, temperature rise, and duration of the permitted commissioning discharges, EPA expects the heat of these discharges to dilute rapidly in the ocean. After considering the discharge and its likely effects in light of the ODC and the Water Quality Criteria, EPA expects that neither water quality nor local biological communities nor any other aspect of the marine environment will suffer any significant adverse impacts from the facility's thermal discharges, and consequently, the discharge will not cause unreasonable degradation of the marine environment.

However, to verify this conclusion, and pursuant to 40 C.F.R. § 125.124, EPA has requested that the permittee conduct and submit a CORMIX analysis to model the impact of the thermal discharges on the marine environment prior to the issuance of a final permit. Assuming that the CORMIX predictions are consistent with EPA's initial conclusions, EPA will prepare the final permit and include the CORMIX model findings in the response to comments.

8.0 316 (b) Cooling Water Intake Requirements

8.1 Cooling Water Intake Structures

Section 316(b) of the CWA addresses the adverse environmental impact of CWISs at facilities requiring NPDES permits. EPA has assessed the four factors set forth in Section 316(b), i.e., location, design, construction, and capacity, to ensure that the adverse environmental impact attributable to the CWIS at this facility will be minimized. Information used in this assessment includes, but is not limited to, the following: the application for re-issuance of the permit; the Neptune EIS; EPA's Technical Development Document for the Phase III CWA Section 316(b)

Rule; and supplemental information submitted by the permittee.

Location: The location of the CWIS on the vessel is judged to be a factor that affects the potential for impingement and entrainment at the facility. The centerline of the two CWISs on each vessel will be located approximately 10 and 18 feet above the bottom of the vessel's hull, or 17 and 25 feet below the water surface. EPA finds that the CWIS locations, below the water surface, are a BTA factor which minimizes harm due to entrainment and impingement by avoiding withdrawing seawater close to the ocean surface where the planktonic life state of many aquatic organisms are more numerous.

Capacity: The "capacity" of the CWIS refers to the volume of cooling water that it withdraws. ("Capacity" has also been used at times to refer to the CWIS's water intake velocity, but in this document intake velocity is discussed as a function of CWIS design further below.) Because the Neptune regasification system will operate on a closed-loop system, no seawater withdrawal will be necessary for warming and vaporizing the LNG. Heated glycol solution will be used to warm and vaporize the LNG, and the chilled glycol solution will then be re-heated in the closed loop system, and used for regasification of additional LNG. However, seawater intake will be necessary for ballasting purposes as the SRV cargo is off-loaded, and for cooling water for the engines powering the regasification process. Cooling water intake at each buoy at Neptune LNG deepwater port will be intermittent as the buoys will be used (at peak operation), in an alternating fashion with departing and arriving vessels overlapping for nine hours or less. As indicated in the permittee's application, the maximum water withdrawal at each buoy will be 2.25 MGD. The maximum overlap of incoming and departing SRVs will be 9 hours. During the commissioning process for each vessel (which may last up to 45 days per vessel), as described in Section 2.1.1 above, seawater intake has been estimated to average about 8.2 MGD with flow rates as high as 13,900 gpm during short discrete periods if the steam dump condenser is in operation.

Although seawater intake will be necessary to provide cooling water during commissioning as well as ballast water and cooling water for the engines powering the regasification process, Neptune has minimized its cooling water withdrawals needs by selecting closed loop vaporization technology that minimizes the need for seawater withdrawal.

EPA has determined that the use of the closed-loop heat recovery and exchange regasification system is a significant BTA factor which minimizes harm due to entrainment by minimizing the volume of seawater withdrawn for cooling because the proportion of eggs, larvae and juvenile fish entrained from a population is roughly directly proportional to the volume of water withdrawn from the habitat and pumped through the cooling system. The use of this intermittent, closed loop system will also minimize impingement because of the limited flow during events with the potential to cause impingement.

Design and Construction: Water used for cooling, ballast and other needs will be withdrawn from Massachusetts Bay through the SRV's CWISs. Design measures for minimizing adverse impacts from the impingement and/or entrainment of marine life through these CWISs may involve, for example, installing screens and reducing intake velocity so that fewer organisms will be drawn into the CWIS.[8] Physical exclusion occurs when the mesh size of the screen is smaller

[8] EPA, *Technical Development Document for the Proposed Section 316(b) Phase III Rule*, Document Number EPA-

than the organisms susceptible to entrainment. The SRVs are expected to use screens with openings of 1 inch on their sea chests and should be capable of physically excluding most adult and juvenile fish.

In addition, EPA's research supporting its Phase I and Phase III CWIS regulations has indicated that CWIS intake velocities of 0.5 feet/second or less should enable most motile marine organisms, including fish, to swim away from the CWIS and avoid being impinged. (While the substantive requirements of these rules are not applicable to the Port, the underlying biological research suggesting a 0.5 ft/s threshold remains applicable in the absence of site-specific evidence to the contrary.) Additionally, as noted in the TDD, other applicants for offshore LNG import terminals seeking Deepwater Port Act licenses have proposed cooling water intakes to ensure a maximum through-screen design intake velocity not to exceed 0.5 feet/second. Given the similarity of location, design, construction and capacity of these other cooling water intake structures (e.g. both industrial sectors use sea chests for cooling water withdrawals above 2 MGD), EPA proposes to require that a maximum through-screen design intake velocity not to exceed 0.5 feet/second, which represents an appropriate component of the BTA for minimizing adverse environmental impacts from impingement.

Components of BTA for the CWIS: In making this determination, EPA considered the adverse environmental effects from operation of the facility's CWIS and technology options for minimizing these adverse effects by altering the CWIS location, design, construction, and capacity. This site-specific, BPJ determination of BTA for Neptune is based on the following considerations:

1. The location of the CWIS well below the water surface is a component of BTA which minimizes adverse effects, due to the less likely habitat for eggs, larvae, and juvenile fish at that elevation.
2. The design and construction of the CWIS is a component of BTA which minimizes impingement of fish by using small screen openings and the controlled intake velocity.
3. The capacity of the CWIS is also a component of BTA which minimizes entrainment and impingement of adult fish because of relatively low and intermittent intake flows.

To minimize adverse impact of cooling water intake associated with the operation of the Neptune deepwater port, the draft permit requires that the SRVs be constructed, maintained and operated to ensure that:

- CWISs are located at least 23 feet below the surface of the water,
- cooling water intake systems (including the structure and associated intake pumps) maintain a controlled intake velocity no greater than 0.5 feet per second at all times.
- CWISs maintain screen openings no greater than 1 inch, and
- the SRVs use the proposed closed-loop heat vaporization system to regasify LNG.

821-R-04-015, 2004; and *Technical Development Document for the Final Section 316(b) Phase III Rule*, Document Number EPA-821-R-06-003, 2006.

8.2 Cooling Water Intake Monitoring Requirements

EPA reviewed the projected impacts in the EIS resulting from impingement of fish, entrainment of eggs and larvae. An estimate of entrainment losses can be generated by sampling icthyoplankton density in near proximity to the buoys and tracking water usage, and the permit requires implementation of this type of an entrainment assessment. While EPA has concluded that Neptune has minimized cooling water intake flow to the extent that is practicable, the vessels will still require large volumes of seawater. This facility represents a new source of mortality for fish eggs and larvae in this area and thus EPA believes it warrants close scrutiny. Therefore, EPA proposes to require entrainment monitoring as described in the monitoring plan attached to the draft permit (Attachment A).

The FEIS predicts that impingement losses should be minimal. This is largely due to the fact that pelagic species tend to be less susceptible to impingement than demersal ones, because they are stronger swimmers, because intake volumes are low, and because intake velocities are not high. Logistically, there is no readily available access point to sample the intake screens. Thus, due to the limited environmental impact and the great logistical challenge, EPA is not proposing to require impingement monitoring at this time.

9.0 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801 et seq., federal agencies are required to consult with the National Marine Fisheries Service (NMFS) with respect to an action or proposed action "that may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b)(2). Essential fish habitat (EHF) means "waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." 16 U.S.C. § 1802(10). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH. 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination of 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.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. A listing of the essential fish habitat designation for the 10 minute by 10 minute square coordinates containing the discharge locations for Outfalls 01, 02 and 03 are provided in Attachment A.

During the EIS process for the proposed Port, NOAA conducted a formal EFH consultation with the federal agencies issuing licenses or permits for the Neptune Deepwater Port, including EPA. The U.S. Coast Guard (USCG) was the lead federal agency in this consultation. NOAA issued conservation recommendations regarding the port operation on July 14, 2006. USCG completed the consultation process on the DPA license with a response to NOAA dated January 26, 2007. The NPDES permit that EPA proposes today is consistent with the recommendations regarding port operation resulting from the USCG consultation on the DPA license.

Cooling water intake and thermal discharge related to port commissioning were not included in the EFH review conducted by NOAA during the EIS process. A copy of the draft permit has been provided to NOAA for review and comment.

10.0 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) 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 the Interior or Commerce, as appropriate, 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 & Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration (NOAA) administers Section 7 consultations for marine species and anadromous fish.

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

EPA, the other permitting agencies, and Neptune all consulted with the NMFS during the planning stages of this project to minimize impacts to marine and anadromous species. Specifically, the federal agencies issuing permits and licenses for this Deepwater Port Act project engaged in a formal consultation under Section 7 of the Endangered Species Act (ESA) with the National Oceanic and Atmospheric Administration (NOAA). The Maritime Administration (MARAD) served as the lead agency for this consultation on behalf of the other involved federal agencies, including EPA.

On January 12, 2007, NOAA issued a Biological Opinion under Section 7 of the ESA (the NOAA B.O) concluding that deepwater port project would neither likely jeopardize the continued existence of any listed species nor affect any designated critical habitat (NOAA B.O. at 118). NOAA also found, however, that the construction and operation of the deepwater port is likely to result in the take, in the form of acoustic harassment, of certain endangered whales (*Id.* at 118-119). EPA has added a provision to the draft NPDES permit indicating that the permit will remain effective only as long as a NOAA ITS remains in effect for this project. To date, NOAA has not yet issued an Incidental Take Statement (ITS) under Section 7 of the ESA, as an amendment to the B.O. previously issued to MARAD and the other federal agencies, including EPA.

EPA's permit for the Port conditions the Port's operation in a manner consistent with the terms of the project reviewed and evaluated by NOAA in the ESA consultation. Further, EPA's permit is consistent with the conservation recommendations in NOAA's Biological Opinion.

Cooling water intake and thermal discharges related to port commissioning were not included in the ESA review conducted by NOAA during the EIS process. A copy of the draft permit has been provided to NOAA for review and comment.

11.0 National Marine Sanctuaries Act

The Stellwagen Bank National Marine Sanctuary (SBNMS) was designated in 1992 and encompasses approximately 842 square miles in the Gulf of Maine and overlapping the eastern edge of Massachusetts Bay. The Neptune Port is located 1 to 2 nautical miles from the western edge of the SBNMS. In light of this proximity, the Federal agencies issuing permits or licenses

for the proposed Neptune Port consulted with NOAA under Section 304(d) of the NMSA, 16 U.S.C. § 1434(d), regarding the potential effects of the Port on the resources of the SBNMS. This consultation was conducted in connection with the National Environmental Policy Act (NEPA) review of the federal actions necessary to authorize the proposed Port. As with the NEPA and Endangered Species Act (ESA) reviews, the United States Maritime Administration (MARAD) and the United States Coast Guard (USCG) were the lead agencies for the NMSA consultation.

As part of the consultation, NOAA's National Marine Sanctuaries Program (NMSP) recommended "reasonable and prudent alternatives" for the federal action agencies to pursue in order to protect sanctuary resources. One of the NOAA/NMSP recommendations relates to the EPA's draft NPDES permit for the Port. Specifically, NOAA/NMSP recommended that monitoring of the entrainment of marine organisms from seawater intake during facility operations be required. As discussed above, EPA has considered CWIS entrainment effects in connection with its analyses under CWA Section 316(b), and in the context of the consultation under the ESA, NMSA and the Magnuson Act. In addition to cooling water withdrawal limits designed to minimize adverse impacts from entrainment, EPA's proposed permit includes entrainment monitoring requirements consistent with NOAA's recommendations for port operation under the NMSA.

The potential impacts of cooling water intake and discharge related to port commissioning on Stellwagen Bank were not evaluated by NOAA in their NEPA review. A copy of the draft permit has been provided to NOAA for review and comment.

12.0 Comment Period, Hearing Requests, and Procedures for Final Permit

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 Ellen Weitzler, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch (CIP), 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public 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.

13.0 EPA and MassDEP Contacts

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:

Ellen Weitzler
Industrial Permits Branch

U.S. Environmental Protection Agency
1 Congress Street, Suite 1100 (CIP)
Boston, MA 02114-2023
Telephone: (617) 918-1582
Email: weitzler.ellen@epa.gov

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

REFERENCES

EPA, *Allocated Impact Zones for Areas of Non-Compliance,* EPA 823-R-95-003, March 1995.

EPA, *Quality Criteria for Water 1986,* EPA 440/5-86-001, Washington, D.C., May 1, 1986.

EPA, *Technical Development Document for the Proposed Section 316(b) Phase III Rule,* EPA 821-R-04-015, Washington, D.C., November 2004.

U.S. Coast Guard, *Final Environmental Impact Statement/Environmental Impact Report for the Neptune LNG Deepwater Port License Application*, Docket No. USCG-2005-22611, November 2006.

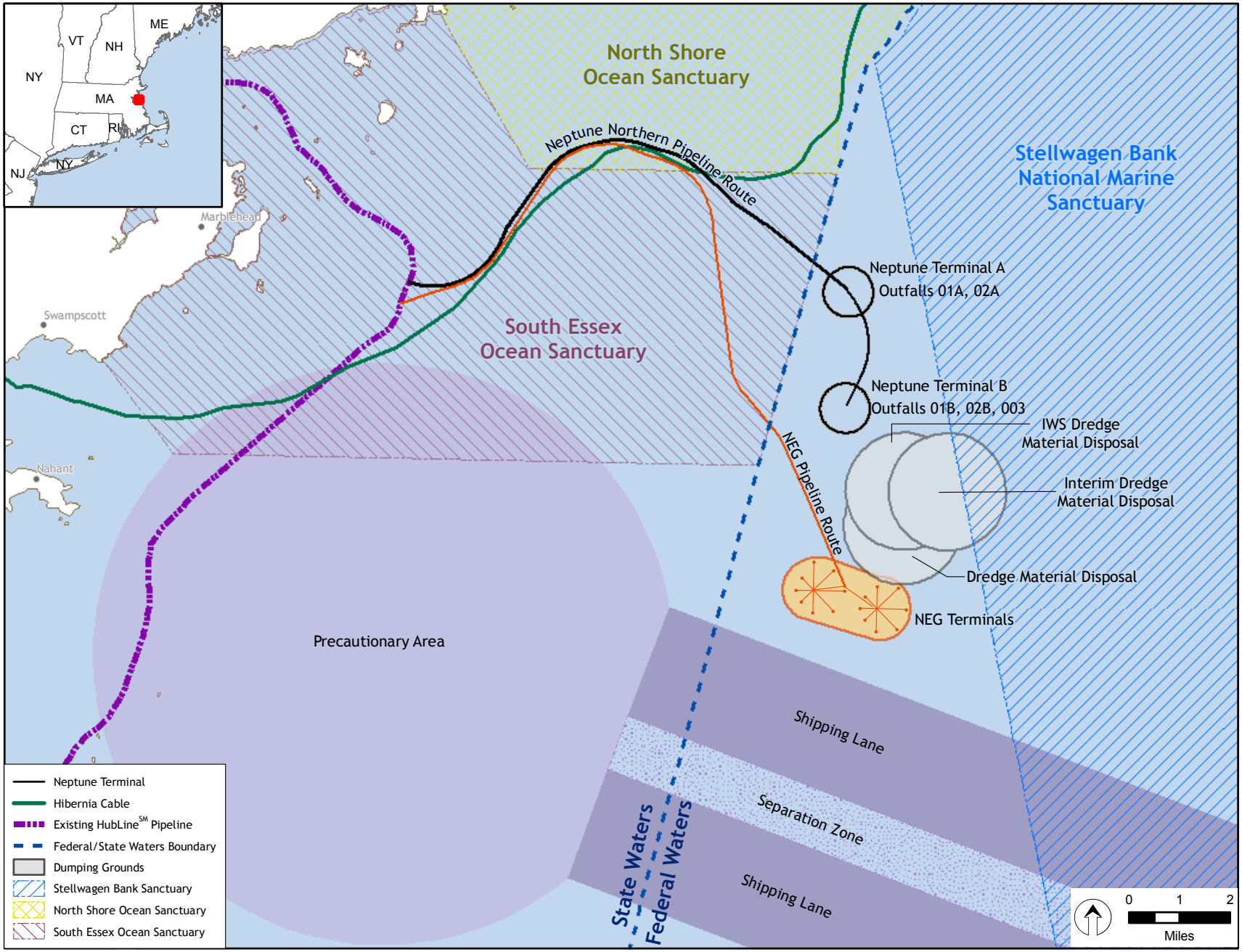


Figure 1 - Location Map of Proposed Neptune LNG Pipeline and Terminal

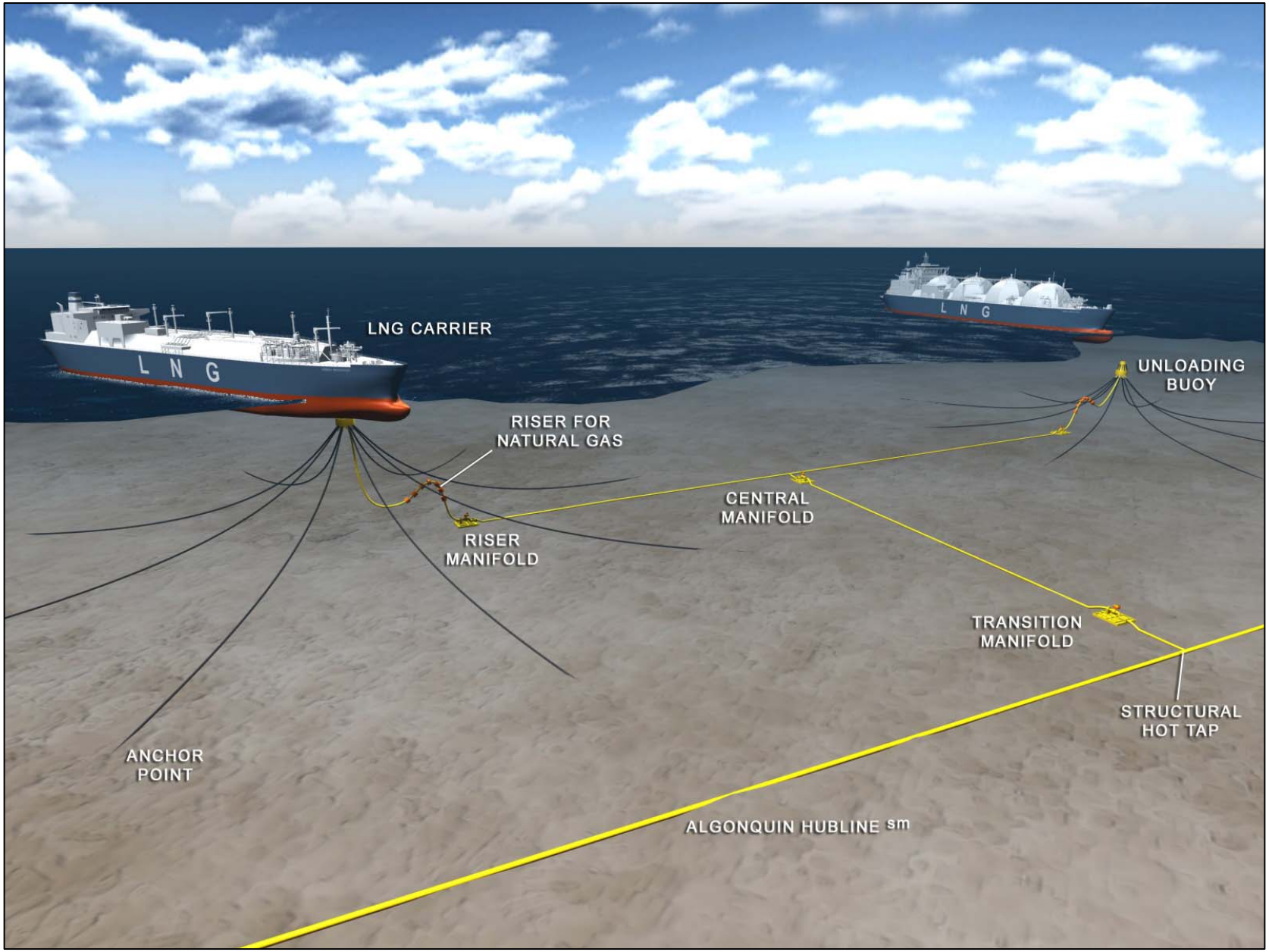
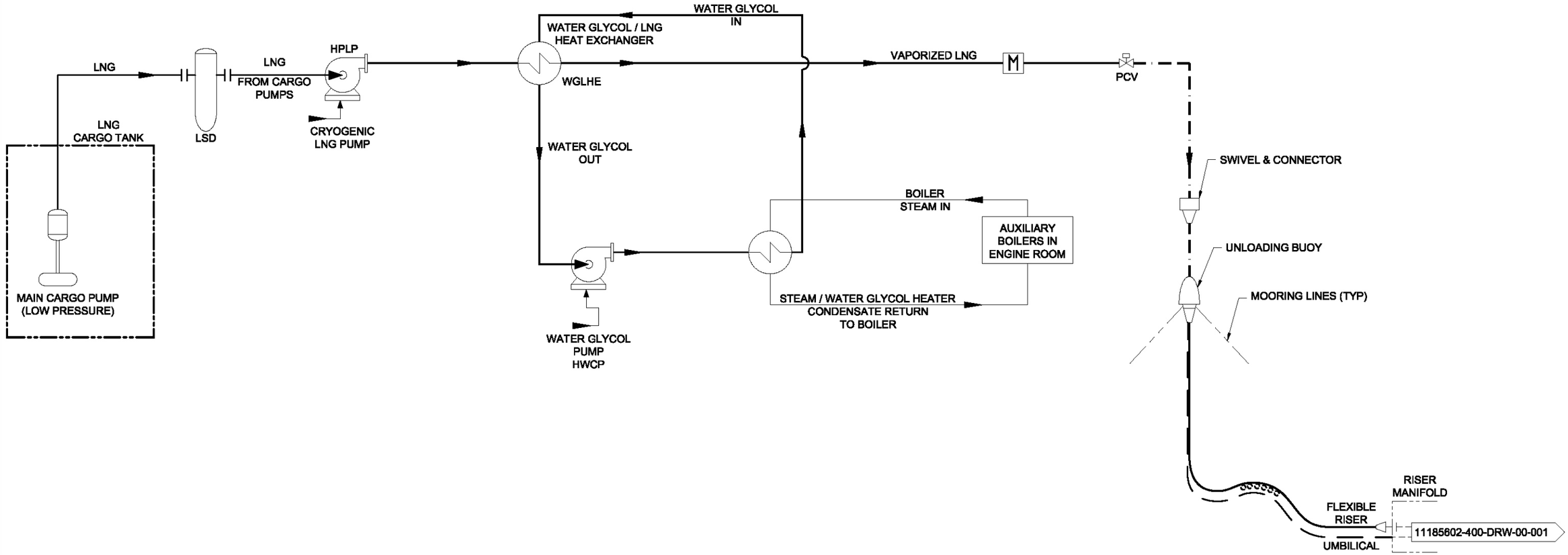


Figure 2 – Neptune Deepwater Port Schematic



TERMINOLOGY LEGEND	
ABBR.	DESCRIPTION
HPLP	HIGH PRESSURE LNG PUMP
HWCP	HEATING GLYCOL WATER CIRCULATION PUMP
LNG	LIQUID NATURAL GAS
WGLHE	LNG / RECIRCULATING WATER GLYCOL HEAT EXCHANGER SHELL & TUBE TYPE
LSD	LNG SUCTION DRUM
PCV	PRESSURE CONTROL VALVE
SHE	STEAM HEAT EXCHANGER

SYMBOLOGY LEGEND

- FLANGE
- VALVE (FULL BORE)
- HYDRAULIC OPERATED CONTROL VALVE
- BEND RESTRICTOR
- SWIVEL & CONNECTOR
- BUOY
- SUBSEA STRUCTURE
- METER UNIT
- HEAT EXCHANGER
- CENTRIFUGAL PUMP
- FLOW DIRECTION
- SUMP
- 16"Ø x 24"Ø EXPANSION JOINT
- LNG UNLOADING LINE
- COMMON LOOP
- CLOSED LOOP
- MOORING LINES
- ELECTROHYDRAULIC CONTROL UMBILICAL
- HIGH PRESSURE FLEXIBLE HOSE

11185602-200-DRW-00-006-1

GENERAL NOTES:

1. LNG FLOW:

FROM LNG CARGO TANK TO LNG SUCTION DRUM (LSD). HIGH PRESSURE LNG PUMP (HPLP) TAKES SUCTION FROM THIS DRUM AND PRESSURIZES LNG TO HIGH PRESSURE. IT IS THEN VAPORIZED IN THE HEAT EXCHANGER (GLYCOL / LNG HEATER) BEFORE EXPORT.

PROCESS FLOW DIAGRAM
CLOSED LOOP LNG VAPORIZER

Figure 3 - Process Flow Diagram - Closed Loop LNG Vaporizer

ATTACHMENT A

Summary of Essential Fish Habitat (EFH) Designation

Neptune LNG Deepwater Port - 10' x 10' Square Coordinates:

Boundary	North	East	South	West
Coordinate	42° 30.0' N	70° 30.0' W	42° 20.0' N	70° 40.0' W

Square Description (i.e. habitat, landmarks, coastline markers): Waters within the Atlantic Ocean within Massachusetts Bay within the square one square northeast of Scituate, MA. and Cohasset, MA., and three squares east of Boston, MA. There are three overlapping dump sites within this square, two of which are for dredged material, and one of which is a discontinued site that had industrial wastes dumped in it, all of which are approximately in the middle of the square. Also, on the southwest corner, part of the Boston Harbor Shipping Traffic Lane is affected.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod *(Gadus morhua)*	X	X	X	X
haddock *(Melanogrammus aeglefinus)*	X		X	
pollock *(Pollachius virens)*				
whiting *(Merluccius bilinearis)*	X	X	X	X
offshore hake *(Merluccius albidus)*				
red hake *(Urophycis chuss)*	X	X	X	X
white hake *(Urophycis tenuis)*	X	X	X	X
redfish *(Sebastes fasciatus)*	n/a	X	X	X
witch flounder *(Glyptocephalus cynoglossus)*	X	X	X	X
winter flounder *(Pleuronectes americanus)*	X	X	X	X
yellowtail flounder *(Pleuronectes ferruginea)*	X	X	X	X
windowpane flounder *(Scopthalmus aquosus)*	X	X		
American plaice *(Hippoglossoides platessoides)*	X	X	X	X
ocean pout *(Macrozoarces americanus)*	X	X	X	X
Atlantic halibut *(Hippoglossus hippoglossus)*	X	X	X	X
Atlantic sea scallop *(Placopecten magellanicus)*	X	X	X	X
Atlantic sea herring *(Clupea harengus)*		X	X	X
monkfish *(Lophius americanus)*	X	X	X	X
bluefish *(Pomatomus saltatrix)*				
long finned squid *(Loligo pealei)*	n/a	n/a	X	X
short finned squid *(Illex illecebrosus)*	n/a	n/a	X	X
Atlantic butterfish *(Peprilus triacanthus)*	X	X	X	X
Atlantic mackerel *(Scomber scombrus)*	X	X	X	X
summer flounder *(Paralicthys dentatus)*				
scup *(Stenotomus chrysops)*	n/a	n/a		
black sea bass *(Centropristus striata)*	n/a			
surf clam *(Spisula solidissima)*	n/a	n/a		
ocean quahog *(Artica islandica)*	n/a	n/a		
spiny dogfish *(Squalus acanthias)*	n/a	n/a		
tilefish *(Lopholatilus chamaeleonticeps)*				
bluefin tuna *(Thunnus thynnus)*			X	X

RESPONSE TO COMMENTS

REGARDING THE REISSUANCE OF THE FOLLOWING NPDES PERMIT

NEPTUNE LIQUEFIED NATURAL GAS (LNG) DEEPWATER PORT
MA0040258

INTRODUCTION

On February 26, 2008, the New England office of the U.S. Environmental Protection Agency (EPA) submitted for public notice a draft National Pollution Discharge Elimination System (NPDES) permit (draft permit) to Neptune LNG LLC. EPA solicited public comments on the draft permit from February 26, 2008 through March 27, 2008. In addition, EPA heard comments on the permit at a public hearing held on March 27, 2008, at the Beverly Public Library, 32 Essex Street, Beverly, Massachusetts. At that public hearing, EPA extended the comment period until April 3, 2008 to allow interested citizens further opportunity to comment.

The draft NPDES permit would authorize and set limits for the discharge of hydrostatic test water, non-contact cooling water and seawater withdrawal from the Neptune LNG deepwater port. The facility proposes to discharge to the Massachusetts Bay.

During the public-notice (comment) period EPA received comments from the following individuals on behalf of various organizations or themselves. All comments were submitted in writing unless otherwise noted in the responses below.

Polly Bradley, Nahant Safer Waters in Massachusetts, Inc. (SWIM)

Priscilla M. Brooks, Ph.D., Director, Ocean Conservation Program, Conservation Law Foundation

Margaret Hinrichs, SWIM

Phil Guidice, Commissioner, Massachusetts Division of Energy Resources

Philip C. Joyce

Nancy Hodgson Smith, SWIM

Douglas S. Jones, Environmental Manager, Neptune LNG LLC

Renee M. Mary

Heidi Roberts, Sierra Club

Mary Rodrick, SWIM

Mason Weinrich, Executive Director and Chief Scientist, Whale Center of New England

Paul Doremus, Acting Administrator for Program Planning and Integration, NOAA

In accordance with the provisions of 40 C.F.R. § 124.17, this document presents EPA's responses to comments, including all significant comments, received on the draft permit and details any changes made to the permit as a result of the comments.

EPA received several comments regarding proposed LNG deepwater ports that were not specifically related to the NPDES permit in question. EPA has responded to those comments to the extent they relate to other EPA functions. However, EPA does not represent any other

federal, state or local agency in responding to these comments and does not provide responses to comments concerning the responsibilities of such other agencies.

EPA's decision-making for this permit has benefited from the comments submitted. The information and arguments submitted in the comments resulted in a number of improvements to the permit. In addition, EPA noted some errors in the permit which were corrected. Changes from the Draft Permit, summarized below, are reflected in the Final Permit. These changes do not represent significant changes from the Draft Permit.

Changes Made in the Final Permit

1. The monitoring plan in Attachment A to the permit has been modified to allow data sharing for crepuscular monitoring.
2. Corrections were made to Attachment A to the permit. The changes were to replace "Northeast Gateway" with "Neptune LNG Project" in the last paragraph of Section 1.1 and repagination.
3. Paragraph I.B.1.c of the permit was revised to clarify the screen opening dimensions.
4. Part I.A. of the permit has been revised to include a limit to the total annual volume of seawater withdrawal through the cooling water intake structures.
5. Part I.B.1.a of the permit was revised to correct the depth of the cooling water intake structures.

RESPONSE TO COMMENTS

Comments 1 through 4 from Douglas Jones, Environmental Manager, Neptune LNG LLC

COMMENT 1

<u>Permit Part 1</u> – Page 2 of 8, Outfall 003, Flow Rate – The Neptune construction plan provides for two full volume discharges of sea water even under anticipated contingency situations. Neither seawater volumes will be treated with corrosion inhibitors. There are, however, several extreme contingency situations that could arise and could require a third fill and discharge to preserve the integrity of the installed systems. None of these are likely or anticipated. Without elaborating on them, Neptune would like to reserve the ability to discharge the total volume required to fill the pipeline and flowline three times instead of two times.

RESPONSE 1

The permit requirements in Part I of the permit cover <u>normal</u> commissioning and operating conditions. "Extreme contingency" and emergency situations are covered in the Standard Conditions in Part II of the permit. The Standard Conditions provide instructions for reporting and mitigation in the unlikely event of an upset or anticipated noncompliance.

COMMENT 2

<u>Attachment A</u> On page 1 of 5, last paragraph of Section 1.1, replace "Northeast Gateway" with "Neptune LNG Project". Under "Field Methods", page 2 of 5, we would like a statement added that states the crepuscular period samples will be shared with Northeast Gateway and the collection point will be midpoint between both deepwater point locations. Attachment A did not contain a page 5 of 5.

RESPONSE 2

EPA has made the first correction (replacing "Northeast Gateway" with "Neptune LNG Project") to Attachment A.

The comment refers to an arrangement with Northeast Gateway Deepwater Port to share data collected at a monitoring location between the two deepwater ports rather than to duplicate efforts in the same area. EPA has no objection to such data sharing, when appropriate. However, to ensure that Neptune be held responsible for the sample collection, whether or not Northeast Gateway participates, two sentences have been added to the last paragraph of section 2.3 of Attachment A which reads, "The permittee may, at its option and with the agreement of Northeast Gateway, LLC, share crepuscular period samples with Northeast Gateway, LLC, at the midpoint between their respective deepwater port locations. However, the preceding sentence shall not be construed to impose any obligations on Northeast Gateway, LLC, nor to affect in any way Northeast Gateway's obligations under its own NPDES Permit No. MA0040266, nor to diminish or relieve in any way the permittee's obligation to satisfy all requirements of this permit." EPA wishes to make clear that this provision in no way makes Northeast Gateway responsible for performing any requirements in this permit.

EPA has corrected the pagination error.

COMMENT 3

<u>Fact Sheet</u> – Section 2.1, 3rd line of first paragraph, should read, 'Additional 11.4-MW and 5.7-MW engines will be……' Page 18, first bullet should read, 'CWISs are located at least 17 feet below…'

RESPONSE 3

EPA notes the comments. The fact sheet will not be reissued (this response to comments explains any changes to the draft permit and serves as an addendum to the fact sheet). No changes to final permit have been made as a result of this comment.

COMMENT 4

Enclosed is the CORMIX analysis for commissioning discharges that Neptune's environmental consultant, Ecology and Environment, performed to model the impact of the thermal discharge on the marine environment.

RESPONSE 4

EPA notes the submittal of the letter report attached to Neptune's comment letter entitled, "*Neptune* LNG Project – Thermal Modeling Results for Vessel Commissioning Discharge" dated March 27, 2008. See response 8 below for additional discussion.

Comment 5 received from Paul Doremus, Acting Administrator for Program Planning and Integration, NOAA

COMMENT 5

NOAA agrees with the EPA's restrictions on daily water use and flow rate as included in the draft NPDES permit for the first 5 years of the Neptune Port's operations, since, even with the inclusion of three ship commissioning events, daily flow rates and daily water use levels would remain restricted to the thresholds that were evaluated under NEPA and

during NOAA's ESA, EFH and NMSA consultations. However, the permit should also include language acknowledging that the company agreed to modify regasification activities at the Port's two buoys to ensure that additional water use for the three commissioning events will not exceed the total annual water use values previously evaluated. It is NOAA's understanding that the licensing agencies (U.S. Coast Guard and Maritime Administration), in approving a change in the project's description to include commissioning, secured a commitment from Neptune, LLC that total annual water usage would not exceed values included in the project's Final Environmental Impact Statement (FEIS) and in consultations with NOAA. Subsequent to clarifying that additional water usage for ship commissioning will not exceed all previously evaluated levels for the Neptune Port, comments on the draft NPDES permit specific to each of NOAA's consultations are as follows:

NOAA's National Marine Fisheries Service (NMFS) previously evaluated the effects of discharges associated with the Neptune Port on listed species in a January 12, 2007 Biological Opinion issued to the Maritime Administration (MARAD) for the construction and operation of the Neptune Port. Consequently, no further consultation pursuant to Section 7 of the ESA is required. Reinitiation of consultation under the ESA would be required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) a new species is listed or critical habitat designated that may be affected by the action; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not previously considered; or (4) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.

NMFS has also received an application from Neptune, LLC for take of marine mammals by Level B harassment incidental to construction and operation of the Neptune Port. NMFS is reviewing this application and has proposed to issue an incidental harassment authorization under the authority of Section 101(a)(5)(D) of the MMPA (16 U.S.C. 1361 et seq.) to Neptune, LLC to incidentally take, by harassment, small numbers of marine mammals during construction of the Neptune Port (73 FR 9092, February 19, 2008).

In addition, NMFS, in a letter dated July 14, 2006, provided Magnuson-Stevens Fisheries Conservation and Management Act Essential Fish Habitat (EFH) conservation recommendations to the U.S. Coast Guard (USCG) and Army Corps of Engineers. EPA incorporated NMFS's conservation recommendations into the draft NPDES permit relative to water usage and therefore the EFH consultation is concluded.

Finally, water discharge as allowed by the EPA NPDES permit for operation of the Neptune Port is likely to affect resources of the Stellwagen Bank National Marine Sanctuary. These effects were considered during consultations between the NOAA National Marine Sanctuary Program (NMSP) and the USCG and MARAD (on behalf of the EPA) pursuant to section 304 of the National Marine Sanctuaries Act. Recommendations made by NMSP to date (submitted July 17, 2006 and further clarified in a letter from the NMSP to the USCG/MARAD on December 7, 2006) as a result of those consultations are based upon the water rates and levels as described in the FEIS. Further consultation under the NMSA relative to water usage may be required if rates or levels associated with the Neptune Port were to exceed those considered in the FEIS.

RESPONSE 5

The final permit has been revised to include a requirement in Part I.A that total withdrawals of seawater through the cooling water intake structures not exceed 873 million gallons in any calendar year, to be consistent with the total water withdrawal estimates evaluated in the FEIS.

EPA agrees with NOAA that no further consultations are required. No further change to the final permit has been made as a result of these comments.

Comment 6 from Phil Guidice, Commissioner, Massachusetts Division of Energy Resources

COMMENT 6

The Massachusetts Division of Energy Resources (DOER) appreciates this opportunity for the public to provide comments on the draft National Pollution Discharge Elimination System (NPDES) permit for the Neptune Deepwater LNG port. While DOER is not making specific recommendations concerning this draft permit, DOER wishes to express its continued support for the Neptune project.

DOER is the state agency responsible for implementing and advocating for energy policies that ensure an adequate supply of reliable, affordable and clean energy for the businesses and residents of Massachusetts. We view the Neptune LNG project as a new and important supply of natural gas for the citizens of the Commonwealth. In fact, the ability of Neptune to be in-service by year-end 2009 was a critical consideration in the Commonwealth's approval of this project in December 2006 pursuant to the Governor's responsibilities under the federal Deepwater Port Act.

DOER recognizes the importance of and growing demand for natural gas to meet New England's energy need, especially to fuel space heating and electrical generation in peak winter months. Gas use in the electric power sector has risen sharply due to the influx of gas-fired power plants in New England over the past decade. Almost every power plant built in the past 10 years has been gas-fired. Gas currently fuels about 40% of the region's electricity supply. The region's electric grid operator, ISO-New England, has called for aggressive energy efficiency and demand-reduction actions, but recognizes that New England will continue to depend on natural gas-fired generation for a large percentage of its electricity. In addition to meeting the increasing electricity demand for gas, we see a need for more and diverse supply sources of natural gas for the traditional gas use in homes and businesses.

Multiple, independent reports verify that both Massachusetts and New England need additional supplies of natural gas as early as winter 2007/08 and definitely before 2010. Neptune LNG will be able to provide a new supply of energy within that timeframe. The company's investment in the Neptune port is a long-term commitment to operate the facility and bring new supplies to the Commonwealth. Therefore, in order to achieve an in-service date of 2009, the Commonwealth made best efforts to expedite decision-making on all state permits, licenses and authorizations required for the project, consistent with the state's legal authorities.

DOER appreciates EPA's efforts to carefully review the record for this NPDES permit. Our hope is that any issues that arise concerning the permit can be resolved expeditiously to allow this project to be built and operational by 2009.

RESPONSE 6

EPA appreciates DOER's concern that the NPDES permit be issued in a timely fashion and shares the goal of issuing the final permit to be effective as soon as possible. No changes to the final permit have been made as a result of this comment.

Comments 7 through 10 from Priscilla Brooks, Ph.D., Director, Ocean Conservation Program, Conservation Law Foundation:

COMMENT 7

Regulation of LNG Regasification Facilities Under NPDES Program

CLF supports the determination that moored vessels undertaking regasification operations, such as the proposed Neptune LNG facility, are subject to regulation under the NPDES similarly to other vessel-based or land-based industrial operations. CLF concurs that the requirements of the Clean Water Act Section 316(b) are applicable to the facility's cooling water intake structures and that the permit's requirements apply to all discharges from and intakes into the Neptune regasification vessels when they are interconnected with the buoys and integrated into the port.

RESPONSE 7

EPA notes the comment. No changes to the final permit have been made as a result of this comment.

COMMENT 8

Potential Impacts on Species/Aquatic Life

CLF notes that the proposed intake and discharge of seawater contemplated for the deepwater port infrastructure and vessel commissioning processes, 8.2 million gallons per day (MGD), is significant, particularly given that this quantity could be discharged over a very short time frame at the rate of 13,900 gallons per minute with a temperature differential as much as 10 degrees centigrade between the discharged water and the receiving waters of Massachusetts Bay. Although the commissioning discharge will be non-routine and the shuttle and regasification vessels (SRVs) will be granted only three attempts to meet the SRV regas performance specifications and pass the acceptance test, this discharge has the potential to cause negative impacts to aquatic life. EPA has requested that the permittee conduct and submit a CORMIX analysis to model the impact of these thermal discharges on the marine environment prior to the issuance of a final permit. CLF also notes that cooling water intake and thermal discharges related to port commissioning were not included in the Essential Fish Habitat (EFH) or the Endangered Species Act (ESA) reviews conducted by NOAA during the Environmental Impact Statement (EIS) process and that prior to the issuance of the final permit, EPA will seek review and comment from NOAA on these issues. The final permit must therefore take into account the results of the CORMIX modeling and the EFH and ESA reviews by NOAA and set intake and discharge limits that do not risk significant harm to marine life.

RESPONSE 8

As reported in response 4, Neptune has submitted CORMIX thermal modeling results which are provided herein as Attachment A. The model conservatively assumes a sustained 5,700 gpm

flow at the maximum temperature differential of 10ºC. The 13,900 gpm referred to in the comment would occur only in the event that the steam dump condenser is in operation and would not be sustained. Although the steam dump condenser is not expected to operate often, it is required to reject heat when the marine boilers must remain operating and the regas skid is temporarily shut down (this can occur during short shutdowns of the regas skids during commissioning or during stack emission testing at low gas sendout flows). Seawater will be used to supply the central freshwater coolers and dump condenser and freshwater generators. Seawater will be withdrawn from both the upper and lower sea chests, and the intake velocities at both sea chests will remain below 0.5 feet per second.

The model results indicate that the effects of the commissioning thermal discharges will cause negligible impacts to fish or marine mammals due to the limited water volume affected by temperature increases and due to the temporary nature of the discharge. Impacts associated with the intake of seawater were examined in the EIS and were included as part of the EFH and ESA reviews conducted by NOAA. The commissioning activities will not result in an increase in the annual water usage rate evaluated in the FEIS. EPA has revised the final permit to include this as a requirement, as recommended by NOAA (see comment 5).

COMMENT 9

Monitoring

CLF believes strongly that the permit should require strict monitoring of water quality and the likely entrainment and impingement of marine organisms by the cooling water intake structures. While the permit properly requires monitoring for water quality and entrainment, no such requirement has been set for the equally problematic phenomenon of impingement. The cooling water intake will be located mid-water, at least 17 feet below the surface, and will be equipped with an intake screen with openings no greater than 1 inch (NPDES Draft Permit No MA 0040258) which is large enough to allow eggs, larvae and other marine life to be entrained and adult organism to be impinged and killed or injured on the intake screens. CLF notes that there is a discrepancy between the draft permit requirement of 1 inch (implying a 1 by 1 inch dimension) and the Fact Sheet that states the uptake screen opening dimensions to be 1 by 12 inches in size – a dimension that could result in far more entrainment of marine life (NPDES MA0040258 Fact Sheet, p. 6). CLF supports the 1 by 1 inch screen opening required in the draft permit. During operation, water will be withdrawn at velocities up to 0.5 feet per second and there is potential for fish and other marine life mortality due to impingement on the intake screen.

CLF feels strongly that monitoring of impingement at the cooling water intake screen is essential and would reflect the Best Technology Available and must therefore be a condition of the permit, particularly as the proposed facility will operate in a very biologically rich and sensitive body of water (that, as EPA notes, provides Essential Fish Habitat for at least 21 species (NPDES MA0040258 Fact Sheet, p. A1)) and because this particular facility is one of the first of its kind not only in Massachusetts Bay, but in the entire Gulf of Maine. CLF does not agree with the assumption relied on by EPA from the FEIS, which "predicts that impingement losses should be minimal. This is largely due to the fact that pelagic species tend to be less susceptible to impingement than demersal ones, because they are stronger swimmers, because intake volumes are low, and because intake velocities are not high." (NPDES MA 0040258 Fact Sheet, p. 19). Because of the biological sensitivity and diversity of species in this area, the potential for significant impingement impacts exists, even at a depth of 25 feet, with a controlled intake velocity of 0.5 feet per

second and other aspects of facility design described in the Fact Sheet. (NPDES MA 0040258 Fact Sheet, pp. 16-19).

At a minimum, a video monitoring system should be affixed at the intake so that visual quantification of impingement can be carried out. Underwater video is widely use by commercial fishermen, marine scientists, ocean engineers, and search and recovery teams, including in the Massachusetts Bay, and is clearly readily available and within reach for a large scale and technologically sophisticated project of this kind, operating in waters that support a large diversity of fishes as detailed in the NPDES Fact Sheet Attachment A on Essential Fish Habitat. Monitoring of impingement reflects the Best Technology Available, is a reasonable and prudent requirement for this permit and should not add substantial burden in the context of a robust monitoring program.

RESPONSE 9

The commenter misinterprets the draft permit requirement in the permit that cooling water intake structures "maintain screen openings no greater than 1 inch." EPA intended to require that the screen wires be spaced no more than one inch apart, but did not intend to require that the screen produce 1 inch square openings. The reference to the screen dimensions, in the intake description section on page 6 of the fact sheet, was for informational purposes. The description mistakenly implies that both the screen (slot) spacing and the cross bar spacing (12 inches) are intended to minimize entrainment. In fact, the cross bar spacing is designed to structurally support the screening. EPA has clarified the description to read "CWISs maintain screen slot openings no greater than 1 inch" to reflect the slot shape of the openings and to clarify that the slot opening cannot exceed 1 inch, without regard to the slot width.

While underwater video is widely used in some applications, EPA disagrees with the inference in the comment that video monitoring of cooling water intake structures on large vessels is common or has been established as BTA. EPA knows of no other such monitoring program. Video monitoring of the intake screen would present significant technological challenges. For example, at more than 20 feet below the water surface, in the North Atlantic and within the recesses of a hull, ambient light would not be sufficient to generate useful video. Therefore, substantial lighting would be required. Frequent maintenance would be required of the camera and lighting ports to remove biofouling and ensure that images are of useful quality. Additionally, the presence of the lights would serve as an attractant and may actually increase the risk of impingement.

For the above reasons, a video monitoring program is not a component of the Best Technology Available for minimizing adverse environmental impact at this facility.

COMMENT 10

Adaptive Management

Because the vessel design and technology proposed for the Neptune regasification facility is relatively new and one of the first of its kind in the waters off New England, there will be unknowns that emerge during construction and operation. Impacts on aquatic life cannot be fully quantified until after the facility begins operation. Therefore, the monitoring provisions proposed in this draft permit and the additional monitoring recommended by CLF are necessary to ensure the protection of aquatic life in Massachusetts Bay. The final permit should also include an adaptive management plan that will be in place before construction and operation commences and that will specify the steps that need to be taken

to address impacts as they are discovered, including additional monitoring and mitigation measures.

EPA has acknowledged that even though the design of this facility has taken measures to reduce cooling water intake volume, "the vessels will still require large volumes of seawater" that will represent a new source of mortality for fish eggs and larvae (NPDES Fact Sheet, p. 19). Additionally, the impacts of the thermal plume are still not fully understood and additional modeling by the permittee has been requested by EPA. In order to ensure the proper level of environmental consideration while allowing the relatively new technologies in this LNG regasification project to move forward, there must be a rigorous adaptive management protocol in the final permit that will address the inevitable unknown factors that will come with this new use of our offshore ocean waters. A discussion of and requirements for Adaptive Management should be added to this permit and any other permits for offshore LNG regasification in Region 1.

Adaptive management is a process by which data that is collected on an ongoing basis informs real changes in practices to abate unanticipated environmental consequences and compensate for truly unavoidable impacts.[1] "Adaptive management is not a trial and error approach."[2] Rather, an adaptive management plan should be agreed on and put in place *before the facility begins operation*. A good adaptive management plan must be predicated on an appropriate plan for ongoing monitoring during operation of the facility to detect unexpected harm to the environment or unexpected conflicts with other uses.

The Adaptive Management Plan should include provisions for: (1) additional data collection by the project owner/operator in the event that a harmful impact is detected or suspected; (2) a mechanism by which the owner/operator will report back results of monitoring data collection and make such data publicly available; (3) thresholds over which the facility will take action to mitigate/eliminate harms; (4) a plan specifying the types of actions the facility will take in the event of each category of environmental impact; and (5) provisions for monitoring to assess whether the adaptive measures are effective at remedying the impact, and a re-evaluation of goals if it is determined that the prescribed actions are not working.[3] Finally, EPA should include a re-opener in this permit that would allow EPA to require the project to modify its operations for a portion or all of the facility if ongoing monitoring data reveals that the project's environmental impacts are significant.

RESPONSE 10

The NPDES permit regulations, and this permit in particular, contain several mechanisms to assist EPA in assessing the facility's impacts and, if necessary, taking responsive action.

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[1] See Shawn Smallwood and Linda Spiegel, California Energy Commission, *Assessment To Support An Adaptive Management Plan For The APWRA, (January 19, 2005), available at* http://www.biologicaldiversity.org/swcbd/Programs/bdes/altamont/CEC-assessment-mitigation-plan.pdf (last accessed 5/14/07).

[2] Id., at 2.

[3] Shawn Smallwood and Linda Spiegel, California Energy Commission, *Assessment To Support An Adaptive Management Plan For The APWRA*, (January 19, 2005), *available at* http://www.biologicaldiversity.org/swcbd/Programs/bdes/altamont/CEC-assessment-mitigation-plan.pdf (last accessed 5/14/07).

The permit contains monitoring requirements for each discharge outfall and a monitoring program in Part I.C. The Water Technical Unit of EPA Region 1's Office of Environmental Stewardship will review the regular monthly monitoring reports to ensure that discharges are meeting effluent limits prescribed in the permit, as well as for compliance with the conditions applicable to the intakes. In addition, the Ocean and Coastal Unit of EPA Region 1's Office of Ecosystem Protection will review the annual biological monitoring reports on an annual basis as meaningful data sets are developed. These annual reports will be submitted to the aforementioned EPA offices, to NMFS, and to the Stellwagen Bank National Marine Sanctuary Office.

If necessary and appropriate, EPA may modify, revoke, or terminate the permit pursuant to applicable procedures. See 40 C.F.R. §§ 122.62, 122.64, 124.5; Permit Part I.A.18.

Comments 11 through 13 from Polly Bradley, Margaret Hinrichs and Nancy Hodgson Smith, Nahant Safer Waters in Massachusetts, Inc. (SWIM).

COMMENT 11

The Northeast Gateway LNG facility has already been constructed nearby, so all the harmful effects of the Neptune project will in essence be doubled.

SWIM commented extensively in written and spoken testimony at the Northeast Gateway NPDES hearing. That testimony, and the EPA responses, are relevant to the Neptune NPDES permit application.

The EPA responses to comments at the Northeast Gateway hearing state that independent third party monitoring would be a "notable departure from standard NPDES program practice." SWIM's response to this is that the EPA "standard NPDES program practice" is inadequate and improper. Monitoring by an independent third party is still essential. Both SWIM and the Whale Center of New England voiced concern about and objection to the "standard NPDES program practice." SWIM also believes that the monitoring plan is inadequate in size and comprehensive-ness, recommending a plan similar to that required for the Massachusetts Water Resources Authority outfall monitoring plan.

The comments at the Northeast Gateway hearing and the EPA responses also address the issue of plankton loss, which the EPA states will have minimal impact on feeding whales. The EPA also states that if monitoring results in the future suggest an impact greater that anticipated, then the permit can be modified to address the issue.

SWIM firmly states that monitoring by the energy companies themselves is inadequate and thus unlikely to result in data that would ever require a change in the permit.

After reading the comments mailed to us by the EPA stating that the Whale Center of New England offered to participate in such a monitoring plan and that the EPA still has stuck to its original inadequate monitoring plan leaves us speechless (well almost!), disappointed and disillusioned over this entire process.

Qualified third party experts, not liquefied natural gas (LNG) corporations or governmental bodies, should be monitoring every step of the way. Improvements need to be made in monitoring the discharge of cooling water at the start-up and shut-down periods. The plankton, which are extremely sensitive to temperature, are subjected to temperature increases high enough to kill them even if they escape being entrained in the seawater withdrawn or being caught up with fish and other organisms in the intake screens

and racks. A monitoring program is needed with specific, quantitative limits designed to trigger action, including if necessary closing down the LNG terminal temporarily or permanently if limits are exceeded.

RESPONSE 11

EPA's NPDES program is governed by the regulations at 40 C.F.R. Part 122 and guided in part by the U.S. EPA NPDES Permit Writer's Manual (1996). The regulations require that NPDES permits include appropriate monitoring requirement, "including biological monitoring methods when appropriate." 40 C.F.R. § 122.48(a); see also id. §§ 122.44(i), 125.123(d)(2).

The comment raises three distinct arguments, which this response answers in turn.

First, the comment argues that the monitoring plan is inadequate in size and comprehensiveness, and suggests a monitoring plan comparable to that developed for the Massachusetts Water Resources Authority. The MWRA monitoring plan is indeed more complex than the monitoring required by this permit. However, while such mechanisms are appropriate for certain permits, they are not required for every permit, and are not necessary here. The volume of the MWRA discharge is several orders of magnitude greater than this proposed discharge. The MWRA is a continuous discharge of municipal sewerage of over 500 MGD. This permit allows for an intake of seawater at a maximum flow of 2.25 MGD during port operation, and an intake and discharge of 8.2 MGD during limited vessel commissioning activities. The monitoring program in the permit meets the requirements of 40 C.F.R. § 125.123(d)(2) and is appropriately scaled for the possible adverse environmental effects of this proposed project.

Second, the comment argues that monitoring conducted by the permittee (or outside consultants that the permittee hires) is inherently inadequate and "unlikely to result in data that would ever require a change in the permit." The monitoring requirements contained in a NPDES permit are enforceable permit requirements, and the permittee is legally obligated to comply with them. A permittee that does not conduct monitoring in compliance with permit requirements, or does not truthfully report the results of such monitoring, may be subject to civil and/or criminal penalties. See 40 C.F.R. § 122.41. As the NPDES Permit Writer's Manual explains[4]:

> Requiring the permittee to routinely self-monitor its discharge and to report the analytical results of such monitoring provides the permitting authority with the information necessary to evaluate discharge characteristics and compliance status. Periodic monitoring and reporting also serve to remind the permittee of its compliance responsibilities and provides feedback regarding the performance of the . . . facility(s) operated by the permittee. Permit writers should be aware of and concerned with the potential problems that may occur in a self-monitoring program such as improper sample collection procedures, poor analytical techniques, and poor or improper report preparation and documentation. To prevent or minimize these problems, the permit writer should clearly detail monitoring and reporting requirements in the permit.

In this case, EPA has specified detailed monitoring and reporting requirements in the permit. Moreover, Neptune has retained a qualified consultant, Normandeau Associates, to conduct

[4] USEPA, U.S. EPA NPDES Permit Writers' Manual, EPA-833-B-96-003, December 1996, page 115, available at <www.epa.gov/npdes/pubs/owm0243.pdf>.

biological monitoring. There is no evidence that Neptune and Normandeau do not intend to conduct biological monitoring and reporting as required by the permit.

Third, the comment argues that "improvements need to be made in monitoring the discharge of cooling water at the start-up and shut-down periods," and suggests that the permit include "specific, quantitative limits designed to trigger action, including if necessary closing down the LNG terminal temporarily or permanently if limits are exceeded." EPA does not believe the inclusion of triggers into the monitoring program is warranted as the impacts associated with this activity are predicted to be limited spatially and temporally.

COMMENT 12

Baleen whales, including the critically endangered North Atlantic Right Whale, depend upon plankton for food. SWIM urges the EPA to consult carefully with the Commonwealth of Massachusetts in accordance with the federal-state agreement concerning protection of the North Atlantic Right Whale. SWIM is also concerned about other endangered species that frequent Massachusetts Bay: blue whale, humpback whale, fin whale, sei whale, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, hawksbill sea turtle and green sea turtle.

Where the plankton is destroyed, baleen whales in particular suffer. The whole ecological structure surrounding the LNG terminals can be altered in ways deleterious to the health and safety of endangered whales and sea turtles. More and more the whales are being found nearer shore from Stellwagen Bank, perhaps because of global warming. Adding a local water temperature increase to global warming will not help the whales of Stellwagen Bank and adjacent waters.

Please consider what happens when a whale opens its mouth and goes after the plankton while the LNG vessels are weathervaning -- moving around their anchoring points with the currents and winds. Whales have not evolved to avoid a moving "island" in the sea, and as the vessel moves with the wind and the whales chase the plankton, collisions are probable. The mass of an LNG tanker is still much, much greater than even the greatest Great Whale. When a whale hits a moving tanker, the result can be disastrous - for the whale. The same is true when a moving tanker hits a whale. There is no way a huge LNG tanker can stop to avoid a whale in its path. It simply takes too long to stop.

RESPONSE 12

A wide range of possible adverse impacts to marine mammals and sea turtles from the construction and presence of the port were assessed in the Final Environmental Impact Statement (FEIS) for the Neptune deepwater.[5] NOAA and EPA determined that the quantity of plankton lost from entrainment over the course of a year would have minimal impact on feeding whales. The NPDES permit provides additional protection by requiring that CWISs be located at least 17 feet below the water surface. If monitoring results in the future suggest an impact greater than anticipated, then the permit can be modified to address the issue. At this point in time, the best

[5] The project modifications to the site location and construction schedule as well as the commissioning intakes and discharges were evaluated by USCG, EPA and NOAA in 2008, prior to the issuance of the draft NPDES permit. The reviewers found nothing in the proposed modifications or commissioning activities that would alter the conclusions of the FEIS.

data available and reasonable projections do not point to entrainment of plankton as having a significant effect on whale feeding.

Although no state is issuing this permit in conjunction with EPA (since the port lies in federal, but not state waters), EPA sent copies of the draft permit and public notice to the Massachusetts Division of Marine Fisheries (DMF), which implements the Commonwealth's right whale conservation program, and other Commonwealth agencies, to solicit their comments (if any) on the draft permit. No comments have been received from these agencies other than the one above from the Massachusetts Division of Energy Resources. However, Massachusetts agencies, including DMF, were involved in the review of the project during the EIS phase of work, in compliance with the Massachusetts Environmental Policy Act, and the project ultimately gained approval from the Governor of Massachusetts in 2006 as required by the Deepwater Port Act.

EPA agrees with the concern expressed for the potential for vessel strikes against whales due to the increase in vessel traffic around the port area. Under the Clean Water Act, however, the NPDES permit regulates water intake and discharges associated with the operation of the port, rather than vessels in transit. The issue of vessel strikes was addressed in the Biological Opinion and the Incidental Take Statement (ITS) issued by NOAA. The NPDES permit is contingent on the port obtaining and maintaining an effective ITS, as stated on page 1 of the permit.

COMMENT 13

Although SWIM has focused here on monitoring and the effect on the whales, other major concerns include the presence of toxic, chemical, hazardous and radioactive wastes in close proximity to the new LNG terminals; the effect on the fisheries; the proximity of three ocean protected areas, including Stellwagen Bank National Marine Sanctuary; safety in case of an LNG spill/explosion or a terrorist attack; the lack of a regional energy plan that would accentuate renewable and alternative energy sources as well as conservation, and the danger of a disabled tanker drifting to shore in a major storm.

The North Shore was fortunate that no blizzard with high winds occurred when the liquefied LNG tanker Catalunya Spirit lost propulsion recently off Cape Cod and was towed to the site of the new Northeast Gateway LNG terminal. A Nor'easter at that time could have wrecked the Catalunya Spirit on our shore, and once ignited it could have obliterated Nahant.

RESPONSE 13

Under the Clean Water Act, the NPDES permit regulates water intake and discharges associated with the operation of the port. The construction and safety issues raised in the comment are beyond the scope of the NPDES permit.

Comments 14 through 23 from Mason Weinrich, Executive Director and Chief Scientist, The Whale Center of New England.

COMMENT 14

First, we would like to emphasize the importance of this review process for the proposed discharge as undertaken by the EPA. As you may know, the review process for the FEIS of this project was rushed to say the least. The review and comment period was limited to 30 days, which is hardly sufficient time for such a complex document with so many issues and components. If that were not enough, the review was essentially simultaneous with that of

the nearby Neptune LNG project, who had an equally complex project and accompanying FEIS. The EPA review of this discharge request should therefore proceed in a cautious and critical manner.

RESPONSE 14

The Deepwater Port Act directs relevant federal agencies to act on an expedited schedule for certain aspects of the licensing process. See 29 U.S.C. § 1504. With respect to this NPDES permit, EPA has proceeded appropriately.

EPA received the NPDES permit application in May 2006 and began actively working on preparation of the draft permit in 2007 after the issuance of the FEIS by the U.S. Coast Guard. During the preparation of the draft permit, EPA requested additional information from Neptune to ensure that the permit was based on a comprehensive understanding of all discharges and intakes. EPA relied heavily on the in depth considerations developed in the Biological Opinion issued by NOAA in drafting permit requirements for biological monitoring.

With respect to the public comment periods, EPA notes that the relevant federal agencies provided separate comment periods on the EIS and then on the NPDES permit. The public comment period on the EIS closed well over a year ago. With respect to the public comment process for this NPDES permit, EPA initially provided the 30-day comment period required by 40 CFR § 124.10(b). Although the scheduling of a public hearing is at the discretion of the EPA

Regional Administrator, see 40 CFR § 124.12, in response to anticipated public interest in this permit and the Neptune LNG project as a whole, EPA held a public meeting (in which EPA solicited and responded to questions from the project) and a public hearing (to enter into the record comments from the public) on March 27, 2008. As a result of a request made at the public hearing, EPA extended the public comment period by five days.

In this response to comments, EPA has reprinted all written comments and unique oral comments in their entirety and responded fully to all comments related to the draft permit.

COMMENT 15

As we repeatedly commented during the EIS process, the proponents have chosen one of the most important marine environments in which to locate their deep water port. The location is designated Essential Fish Habitat, is immediately adjacent to the Stellwagen Bank National Marine Sanctuary, and our own sighting data shows that it is an important marine mammal feeding habitat, especially for humpback and fin whales in September and October (Weinrich and Sardi 2005; Dickey et al. 2006; Weinrich et al. 2006), and for North Atlantic right whales in the winter and early spring (Weinrich and Sardi 2005; Weinrich et al. 2006). To substantiate this, we have attached several maps of whale distribution around the site, and several photos obtained in the past few weeks of whales in close proximity to the project's construction equipment. Hence, we urge the EPA to proceed with extreme caution in allowing discharges with largely unknown consequences, simply because unforeseen circumstances or unexpected outcomes could disrupt this vital ecosystem.

The Whale Center of New England is ultimately opposed to the issuance of this discharge permit, as being far too risky in a fragile and important marine location. If, however, the EPA chooses to issue the permit, we would like to see a number of modifications made to the draft permit in order to insure that unforeseen and drastic consequences [do not] result from the discharge.

Everyone involved in the review of this project knows that it has the potential to be an environmental disaster, and that despite that risk it is being undertaken to provide the region with energy and to generate a profit for private corporations. We think it is a terrible tragedy to risk such an important part of the ocean for energy which could be obtained in many other ways. There are risks to the environment from many components of the project, including increased traffic of massive ships and production of significant man-made noise.

RESPONSE 15

The potential risks associated with the location, construction and operation of the Neptune LNG deepwater port were evaluated in the FEIS. Under the Clean Water Act, a NPDES permit such as this one can impose requirements on the facility's cooling water intake structure and its discharges to waters of the United States. Traffic and noise impacts are beyond the scope of the NPDES program. That said, the permit's effectiveness is contingent upon NOAA obtaining and maintaining an Incidental Take Statement in effect for the port, as stated on page one of the permit.

COMMENT 16

The proposed discharge of water used for cooling the LNG is one of the risks of primary concern (actually, the draft permit does not discuss the temperature of the discharge, only the volume of cooling water; more specifics are necessary and need to be required here). Already, changes in the distribution of several fin-fish species in response to small amounts of warming has been documented on a regional scale. The key issue with this discharge is its potential to affect plankton abundance and distribution in both the near and far fields from the project, especially when considered in combination with the nearby Northeast Gateway LNG facilities. Many species of plankton are highly temperature dependent, and even minor changes to their habitats can result in shifts of abundance and distribution between species. Since each plankton species plays a different role in the ecosystem, such changes can have cascading and unforeseen effects. Warmed waters have also been tied to increased presence of harmful algal blooms, with disastrous consequences for marine life.

RESPONSE 16

The draft permit lists the temperature requirements applicable to the commissioning discharge in Part I.A.3, on page 3 and footnotes 4 and 5. As stated on that page, the applicable limits are a maximum daily temperature increase (over the intake temperature) of 8 degrees Celsius and a maximum instantaneous temperature increase of 10 degrees Celsius.

EPA does not anticipate long term warming of ocean waters in the near or far fields from the deepwater port as a result of the non-contact cooling water discharge during vessel and port commissioning. The reasons for this are twofold. First, the commissioning activities are limited, not ongoing, flow events, which are limited by the permit to 45 days per vessel, and which are estimated to occur only a few times during the permit period. Second, the flows from commissioning are very low compared to the flow of ocean water past the intake structure occurring at the port location.

As reported in response 4, Neptune has submitted CORMIX thermal modeling results which are provided herein as Attachment A. The model conservatively assumes a sustained 5,700 gpm flow at the maximum temperature differential of 10ºC (the 13,900 gpm referred to in the comment would be only if the steam dump condenser were in operation and would not be

sustained). The model results indicate that the effects of the commissioning thermal discharges will cause negligible impacts to fish or marine mammals due to the limited water volume affected by temperature increases and due to the temporary nature of the discharge.

EPA does not dispute that ocean waters have warmed as a result of global climate change. However, the CORMIX modeling results strongly suggest that the very limited thermal discharges authorized by this permit will have no long term impact on regional ocean temperatures.

COMMENT 17

The draft permit states, as one of its conditions, "this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment." The associated fact sheet further states "These guidelines define "unreasonable degradation of the marine environment" to mean:

- **Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;**
- **Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or**
- **Loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge."**

These are all very vague terms, which would be very hard to apply in any realistic sense. We would like to see pre-defined specific, quantitative levels at which appropriate actions would be taken. Ideally, these would exist in the form of a document legally attached to the permit which could be modified and overseen by a working group of project personnel, EPA staff, independent scientists, and area environmentalists. We would envision this process and document to be similar to the Massachusetts Water Resources Authority's contingency plan for its 10-mile long outfall pipe, which was first used in the early part of this decade. That plan has specific levels at which caution and warning actions are triggered, with those actions clearly stated. The Whale Center of New England would commit to be glad to participate in both development of such a plan, and on-going review of the results which indicate whether or not such effects are being seen.

RESPONSE 17

The commenter questions the adequacy of the permit provision (I.A.19) that states: "In addition to any other grounds specified herein, this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment." This precise language is required by 40 C.F.R. § 125.123(d)(4). The definition of "unreasonable degradation of the marine environment" on page 9 of the Fact Sheet is quoted directly from 40 C.F.R. § 125.121(e). The comment does not offer or suggest how or at what levels its proposed pre-defined specific, quantitative levels should be established. The text of I.A.19, though not establishing numeric action levels, does identify specific qualitative standards with sufficient specificity to enable action by EPA if necessary.

The comment proposes that EPA develop a monitoring plan of a complexity similar to the monitoring plan that the technical advisory committee developed for the Massachusetts Water Resources Authority (MWRA). EPA's response to this comment is provided in the third paragraph of response 11.

COMMENT 18

We are also concerned that the permit does not deal with the cumulative effects of the release of warmed water from four offloading stations that are in close proximity to each other. The permit never acknowledges the existence of the Neptune LNG [sic] **project, due to begin construction nearby in the near future, which will also put the nearby ecosystem at serious risk. This cumulative impact also needs to be addressed, and should be part of the same monitoring and contingency requirements as suggested above.**

RESPONSE 18

EPA agrees that the cumulative impact of multiple vessels from multiple LNG deepwater port projects is appropriate for consideration. As an initial matter, the vessels from the Neptune project will have no long term thermal discharges as they will recycle their cooling water into ballast. Consequently, the only long-term thermal discharges will be from the vessels at Northeast Gateway.

As part of the process of developing this final permit, EPA has evaluated those cumulative impacts, and has determined that in this case the cumulative impacts are acceptable. EPA examined the projected size of the thermal plumes from vessels from both Northeast Gateway and Neptune and determined that there would not be unacceptable cumulative impacts even if there were vessels on all four buoys.

COMMENT 19

Of course, understanding the effects, or lack thereof, from the warm water discharge depends on monitoring data gathered during the project, especially in its early phases, and a realistic test against baseline data. We are concerned about whether appropriate baseline data exists for the area in most measurable biological features (see below for one area where we *do* think such data exists). Because the ocean is a highly variable environment, appropriate baseline data requires a time series of data across several years with consistent methodologies, against which environmental variability can be teased apart from project effects. The EPA should examine whether such data actually exists and, if it does not, how impacts of the warmed water could be assessed.

RESPONSE 19

Several ichthyoplankton monitoring efforts exist within Massachusetts Bay. NOAA has been monitoring ichthyoplankton and zooplankton throughout the Gulf of Maine for years. Several of the NOAA sampling stations are within the general vicinity of the proposed project. In addition, Northeast Gateway has collected ichthyoplankton data for the past year and a half, which EPA (and others) can use as a baseline. Finally, Neptune will begin its ichthyoplankton monitoring program in October 2008, which will provide at least 1 year of pre-operational data. Sampling methodologies between these 3 efforts are consistent allowing for reviewers to combine the datasets to gain a more comprehensive picture than any one program could generate on its own.

COMMENT 20

We have reviewed the monitoring plan attached to the proposal, and have also found what we feel is a significant flaw in the proposed sampling scheme. The plan proposes to sample plankton in two ways: at the 20-40 foot depth, where the warm water discharge takes place, and in a vertical average throughout the water column to within 15 feet of the bottom. However, plankton tends to aggregate at marine borders: the ocean surface, the sea floor, and thermoclines. At these edges, plankton concentrations can be spectacular. It is these concentrations on which many marine predators rely. For instance, Dr. Charles "Stormy" Mayo's work on feeding right whales in Cape Cod Bay has shown that they require plankton in concentrations of 3,750 organisms/m^3 in order to feed, and such concentrations are only found along these edges. However, by averaging plankton concentrations across the entire water column, the actual density of plankton in these aggregations is lowered several-fold. Further, the bottom layer would not even be sampled. This both makes it hard to know when such aggregations are present and, by default, makes it harder to show a statistically significant or biologically meaningful change. The monitoring program needs to find some way to determine the potential effects on plankton aggregations, which is what any marine predator looks for.

RESPONSE 20

The purpose of the monitoring plan is not to target the thermocline, but the actual depths from which the intakes are drawing water. The proposed sampling will take place in two ways, at the 20 to 40 foot depth and vertically averaged over the water column. The sample at the 20 to 40 foot depth represents the area in the water column which corresponds with the intake structure. EPA agrees with the commenter that plankton aggregations occur along edges, at the surface, near the bottom or on thermoclines. However, these vessels will not draw water from near the sea floor or from the sea surface, but at least 20 feet below the surface. The most likely way for these plankton aggregations to be entrained is for them to be associated with thermoclines that may have formed between the 20 to 40 foot depths. Thus, the sampling scheme is designed to identify plankton aggregations at greatest risk of entrainment, if they occur within the project area.

The thermocline is a seasonal feature that forms in midsummer and, depending on the weather, may last into fall until storm activity causes it to disperse. When a thermocline is present, its actual depth will vary on a weekly basis. There are some years when thermoclines do not even form and the plankton population disperses more evenly. The twice a month, year round sampling effort described in the monitoring plan is designed to be consistent across such seasonal variations in the ocean environment. In addition, the sampling plan is designed to be consistent with NOAA's and Northeast Gateway's monitoring programs to allow for data comparison between these 3 efforts.

COMMENT 21

Further, the proposed monitoring system contains the following language in its introduction: "Long-term monitoring of ichthyoplankton for power plants with open water intakes, such as Seabrook Nuclear Power Station located in coastal New Hampshire, has demonstrated that spatial differences in the ichthyoplankton populations in the source water body can not be readily detected even with a Before-After Control-Impact (BACI) sampling design because stations well outside the zone of influence of the intake are hydrologically linked to the intake area. Given the circulation patterns in outer

Massachusetts Bay, therefore, additional survey areas would provide no greater resolution of the potential impacts of the Neptune vessels." We would point out that other projects, such as the MWRA discharge monitoring program (a model system which was designed in large part with EPA input) has numerous far-field locations. If there is no attempt to collect data outside of the immediate project area, we won't know if such influences can be detected, as unlikely as they are.

RESPONSE 21

In this permit, EPA is authorizing the long term intake of 2.25 MGD without any long term discharges. MWRA outfall is a continuous discharge pollutants associated with 500 MGD of treated municipal sewerage. The nature or magnitude of these facilities with regards to water quality or biological impacts are vastly different and it is not appropriate to require the permittee to monitor far field ichthyoplankton populations in Massachusetts Bay based on an analogy to the MWRA outfall monitoring plan. In addition, NOAA's ECOMON sampling stations could provide farfield comparisons, if that comparison is ever deemed necessary. The proposed monitoring program meets the requirements of 40 C.F.R. § 125.123(d)(2) and is appropriately scaled for the possible adverse environmental effects of this proposed project.

COMMENT 22

We understand that the EPA does not have the resources to monitor the water flow, plankton concentrations, and other potential effects of the project, and we must therefore rely on independent monitoring of the environmental effects. We suggest that in order to make sure that fair and accurate monitoring takes place, a working group of project personnel, EPA staff, and concerned local citizens and environmental groups together agree on an independent party to monitor the discharge, to be paid for by the project proponents. Ideally, this group would also review the monitoring results, and suggest changes to the monitoring program as required. One obvious way to do this would be to combine this group with the one suggested above for the contingency planning. The Whale Center of New England would commit to participating in this effort.

RESPONSE 22

As stated earlier, EPA does not believe that the size of this discharge warrants convening an advisory committee or working group. However, monitoring results submitted to EPA will be available upon request to interested parties who may review monitoring results and submit feedback. EPA recommends that such feedback be submitted to the contacts identified in Part I.C. of the permit. If necessary, EPA has the authority to modify the permit's monitoring program under 40 C.F.R. § 122.62, and/or ask for additional information pursuant to Section 308 of the Clean Water Act.

COMMENT 23

Finally, we would suggest to the EPA that there is a way to monitor whether there are effects on the ecosystem from the project: through monitoring the area for its use by large whales. In the reports we prepared for both Northeast Gateway and Neptune, we have shown how important the near- and far-field is to feeding whales. The number of acoustic buoy detections of whales being reported on a daily basis through the winter of 2008, and the number of whale sightings and detections reported by Northeast Gateway in their 2007 weekly marine mammal activity reports, only substantiate our contentions. Right whales in

the area feed on calenoid copepods; humpback and fin whales in the area feed on either eupahsiids or amphipods. All of these prey species are plankton that could be affected by warm water infusion, and they are all prey to many species besides whales. However, whales have been shown to require dense concentrations of their prey to feed; they are easily detectable from the surface; and The Whale Center of New England has an on-going 27-year database of whale use of the area to act as a baseline for comparison. Monitoring of these three species, through methods consistent with those used to develop the baseline, should be a required part of the permit if approved. It is notable that already in 2007 although we still saw both species actively feeding in the general LNG project area in fall 2007 while Northeast Gateway LNG construction was on-going, there were fewer whales, and those whales were resident for shorter periods, than in the previous three years. We do not have annual measurements of prey biomass, so it is possible that this is merely related to annual fluctuations in food availability. However, we cannot rule out that there was avoidance of the area because of the project's activities, and this should be considered in both the current Neptune request and any proposed monitoring programs designed to understand the project's impacts.

RESPONSE 23

As part of the Deepwater Port license, marine mammal monitoring is required. The license required the deployment of a series of acoustic buoys that will detect the presence of whales by listening for their songs. Visual monitoring of whales is also required during construction and operation of the ports. Both EPA and NOAA have agreed that this level of marine mammal monitoring is sufficient. Thus, EPA does not believe that additional visual monitoring of whales should be required by this permit.

The following written comment from Philip Joyce was submitted following testimony at the public hearing on March 27, 2008

COMMENT 24

Your report admitted that there would be harm to fish and mammals, Douglas Jones [Environmental Manager, Neptune]. Therefore this project must be aborted. Two ocean sanctuaries should <u>not</u> be disturbed and harmed.

Is Boston Electric Company in Everett going to use LNG gas?

We don't want Nahant obliterated from disabled LNG tankers.

Monitoring should not be done by vested interests (such as federal government agencies).

This country is set up for the people to influence the government. Not the government to the people.

RESPONSE 24

Under the Ocean Discharge Criteria (40 CFR §125 Subpart M) EPA is required to "*determine whether a discharge will cause unreasonable degradation of the marine environment*" (40 CFR § 125.122(a). "*Unreasonable degradation of the marine environment*" is defined in 40 CFR §125.121(e) to mean:

> (1) *Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities,*

(2) *Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms, or*

(3) *Loss of esthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge."*

EPA finds that the operation of the Neptune deepwater port will not cause unreasonable degradation of the marine environment and therefore has developed a permit intended to mitigate and monitor any potential impact on the marine environment to the extent practicable.

EPA cannot comment on the potential purchasers of the LNG.

The potential for LNG tankers to be disabled and/or to cause a safety threat to onshore communities is outside the scope of the NPDES permit. Such issues are instead addressed in the Deepwater Port Act license issued by the Maritime Administration. The 2006 FEIS evaluated safety issues related to the Neptune deepwater port construction and operation.

With respect to third-party monitoring, see fourth paragraph in response 11.

Heidi Roberts presented the following comment in testimony at the public hearing on March 27, 2008

COMMENT 25

I am Heidi Roberts with the Sierra Club. I'm going to keep it brief. I am just going to say that the Sierra Club supports the comments and concern of Nahant SWIM and the other concerned agencies and citizens with this project. And I would like to have the EPA check the results of any monitoring or study that has been done since the construction of the Gateway pipeline. And I want them to determine if there have been any adverse effects on marine life or the ocean floor before you forge ahead in such a hurry.

RESPONSE 25

The monitoring study that examined the impact of the construction of the Northeast Gateway project is currently being compiled by its consultant and is due to EPA at the end of the year. Preliminary findings from limited data currently available do not indicate a measurable impact on aquatic life as a result of the port construction. Since the Northeast Gateway port has not yet been commissioned or used for LNG delivery, ongoing monitoring studies cannot yet measure impacts of the NEG port operation. In addition, Neptune's regasification vessel operations differ from those of Northeast Gateway in that Neptune vessels have no thermal discharges at all during operation. Therefore, the impacts, if any, are likely to be different in nature.

Polly Bradley presented the following comment in testimony at the public hearing on March 27, 2008

COMMENT 26

To get back to what I was going to say, the Northeast Gateway LNG terminal is going to be right nearby, as we all know, right near the shipping channels, which is a real problem, especially for the sailors who are going to be going in and out of the shipping channel. But, it is so near so, essentially, all of the harmful effects of Neptune are going to be doubled because they will be doing the same thing. So, what we should do is multiply everything you say by double. Another member of SWIM, Peg Heinrichs, she's going to talk more about the need for monitoring. So, I will skip over to the matter of the -- of the ecology. I also

want to say that the people in the Whale Center of New England were not able to be here tonight. But SWIM enthusiastically supports the comments of the Whale Center of New England in response to this NPDES permit application. They are the experts. We are concerned citizens in SWIM. We have some experts, but not nearly as much expertise as we would like or as Whale Center of New England has. So, I urge you to pay special attention to their comments, even more than to mine.

On the matter of the whales, our concerns reach from the whales down to the plankton. And the effect, they are all related to each other, as we know. And the whales, especially the baleen whales, the North Atlantic right whale, they're all -- they eat primarily plankton. And so, the biggest thing is dependent on the littlest thing. And everything in between, we know, they're all connected. So therefore, we are concerned about that temperature rise against the effect on the plankton. Not so much on the whales, they can swim away. And very much concerned about the entrainment in those one inch openings that we just heard about, and the plankton goes in, it's -- it's goodbye to them. And that makes us concerned about all of the endangered species that frequent Massachusetts Bay. The blue whale, the humpback whale, the fin whale, the sei whale, and the turtles, Kemp's Ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, hawksbill sea turtle and green sea turtle. I have seen a number of lists of different ones. But anyway, there are about 10 of them that are endangered species that frequent the sanctuary, the national marine sanctuary, Stellwagen Bank, which is so close to this, so dangerously close. And also, as far as the whales are concerned, they are not -- they haven't evolved to avoid islands that are moving. And they're not going to be able to stay away from the ships, especially when they are weather vaning, moving about with the wind and particularly, when they are hunting for plankton. I understand that the whales have moved slightly towards -- in from Stellwagen Bank. I think you can read more about this in Mason Weinrich's comments. So, I focused here on the monitoring and the effects on the whales and the plankton. But, we're still concerned about the toxic chemical and hazardous wastes; the radioactive wastes that are down there. The proximity of three ocean protected areas, two state, one federal, safety in case of an LNG spill and explosion or terrorist attack.

Oh, and I wanted to mention, I gather you're not also planning to close down the LNG terminal in Boston. Now, that's the one that should really go before it goes.

Also, the lack of a regional energy plan, to accentuate renewable alternative energy, and the danger -- there is always the danger of a disabled tanker during a major storm. We were very fortunate when that tanker was disabled off of Cape Cod. And then, we read in the Cape Cod papers that it was towed safely to sea. Well, their idea of towing it safely to sea, of course, which is to tow it up to the already constructed Northeast Gateway terminal. And there it sat. And fortunately, we didn't have a major storm. Because, we had been told that, if there is a major storm, they will know ahead of time so that they will be able to take those tankers far out to sea and there will be no problem. Well, here at these disabled tanker – this disabled tanker sitting there for almost a week. And if we had had a major storm, like the blizzard of '78 30 years ago, it could have obliterated Nahant, which is only 1 square mile.

Any way, those are a few of the reasons that we are against the issuance of this permit. My husband and I were kidding around this afternoon. And he couldn't come tonight, but he does a wonderful windmill -- a wonderful windmill, which I can't do. And he was doing a windmill, and I was doing Don Quixote. And I feel like I am Don Quixote after the windmill. But, you know -- what we want you to know is that you are going to be watched.

We are going to be there. And there are going to be people who care. There are people who care out there. They care about the whales. They care about the environment. And we are going to continue to care. And the younger people are caring too. So, we just came, not because we want to tilt at windmills, because that's no fun. But because we want you to know, we care and we are going to be there watching. Thank you very much.

RESPONSE 26

The effects of discharges and intakes from the two deepwater ports will not be equivalent, as the regasification technology used at the two ports will differ. While the cooling water intake volume per vessel visit will be similar, the Neptune regasification process involves no thermal discharges at all (except during port commissioning), so there will be no added thermal effects related to the permitted discharges to Massachusetts Bay.

EPA shares the concern expressed regarding the potential for vessels to strike endangered whales. As described in response 12, the NPDES permit is contingent on the port having an effective Incidental Take Statement (ITS), as stated on page 1 of the permit.

The development of a regional energy plan and the potential for LNG tankers to be disabled and/or to cause a safety threat to onshore communities are outside the scope of the NPDES permit. The 2006 FEIS evaluated safety issues related to the Neptune deepwater port construction and operation.

EPA applauds the efforts of members of the public to comment on the draft permit and has considered all comments submitted. We encourage the commenter and other members of the public to continue to monitor and provide feedback to EPA during the effective period of the permit.