

**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"),

**U.S. Army Corps of Engineers
Engineer Research and Development Center
Cold Regions Research and Engineering Laboratory**

is authorized to discharge from a facility located at

**72 Lyme Road
Hanover, New Hampshire 03755**

to receiving water named

Connecticut River (Hydrologic Code; 01080104)

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

This permit shall become effective on 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.

This permit supersedes the permit issued on February 17, 2005.

This permit consists of 9 pages in Part I including effluent limitations, monitoring requirements, etc.; 7 pages in Attachment A, WET testing requirements; and 25 pages in Part II including Standard Conditions and Definitions.

Signed this 18th day of September, 2012



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

PART I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- During the period beginning on the effective date of this permit and lasting through the expiration date, the Permittee is authorized to discharge non-contact cooling water from outfall Serial Number 001 into the Connecticut River. Such discharges shall be limited and monitored by the Permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	Discharge Limitations		Monitoring Requirement	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow; 001, MGD	Report	1.9	Continuous	Totalizer ^{1,2}
Temperature, °F	Report	75°F	3/Week	Grab ¹
Trichloroethylene (TCE), ug/l	-----	5.0	1/Month	Grab ³
pH ⁴ , Standard Units	6.5 - 9.0		3/Week	Grab ¹

PART I.A.1 (Continued)

Effluent Characteristic	Discharge Limitations	Monitoring Requirement	
		Measurement Frequency ⁵	Sample Type
Whole Effluent Toxicity ⁵			
LC50 ^{6,7} ; in percent	Report	1 Test	24-Hour Composite
C-NOEC ^{7,8} ; in percent	Report	1 Test	24-Hour Composite
Ammonia Nitrogen as Nitrogen; mg/l ⁹	Report	1 Test	24-Hour Composite
Hardness; mg/l ⁹	Report	1 Test	24-Hour Composite
Total Recoverable Aluminum; mg/l ⁹	Report	1 Test	24-Hour Composite
Total Recoverable Cadmium; mg/l ⁹	Report	1 Test	24-Hour Composite
Total Recoverable Chromium; mg/l ⁹	Report	1 Test	24-Hour Composite
Total Recoverable Copper; mg/l ⁹	Report	1 Test	24-Hour Composite
Total Recoverable Nickel; mg/l ⁹	Report	1 Test	24-Hour Composite
Total Recoverable Lead; mg/l ⁹	Report	1 Test	24-Hour Composite
Total Recoverable Zinc; mg/l ⁹	Report	1 Test	24-Hour Composite

(Note: See page 4-5 for explanation of footnotes.)

EXPLANATION OF FOOTNOTES TO PART I.A.1 ON PAGES 2-3

- (1) Samples of non-contact cooling water can be obtained from the same pipe shared with storm water discharges if either of the following two conditions is met. The cooling water is not being commingled with any other discharge, or there has not been a storm event with a magnitude of precipitation of more than 0.1 inches within the previous 72-hours.

If neither of these two conditions are met and an effluent sample is required, flow proportioned samples shall be obtained from the individual chilling equipment non-contact cooling water discharges.

- (2) Outfall 001 effluent discharge shall be monitored by a continuous recording flow meter containing a totalizer. The flow meter shall be located such that only non-contact cooling water flow is monitored.
- (3) Trichloroethylene shall be sampled directly after discharge from the Trichloroethylene treatment system.
- (4) This is a State Certification requirement. pH shall be in the range of 6.5 to 9.0 standard units (SU).
- (5) The Permittee shall conduct one chronic survival and reproduction WET tests on effluent samples using two species, Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas) following the protocol listed in ATTACHMENT A, *Freshwater Chronic Toxicity Test Procedure and Protocol*, (dated May 2007). Toxicity tests results shall be submitted to the EPA and NHDES-WD.

The WET test shall be completed within 90 days after the receipt of the issued permit.

- (6) LC50 is the concentration of wastewater (effluent) causing mortality to 50 percent (%) of the test organisms. See ATTACHMENT A (VII. TOXICITY TEST DATA ANALYSIS; Page 5 of 7) for additional clarification.
- (7) This Permit may be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the WET tests indicate the discharge exceeds any State of New Hampshire water quality criterion. Results from these toxicity tests are considered "new information" and the Permit may be modified as provided in 40 C.F.R. Section 122.62(a)(2).
- (8) C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results (growth, survival, and/or reproduction) exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect. See ATTACHMENT A (VII. TOXICITY TEST DATA ANALYSIS; Page 5 of 7) for additional clarification.

- (9) For each WET test the Permittee shall report on the appropriate Discharge Monitoring Report (DMR) the concentrations of Ammonia Nitrogen as Nitrogen, Hardness, and Total Recoverable Aluminum, Cadmium, Chromium, Copper, Lead, Nickel and Zinc found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the Minimum Quantification Level (MLs) shown in Attachment A; Section VI. Chemical Analysis, or as amended. The Permittee should also note that all chemical parameter results must still be reported in the appropriate WET test toxicity report.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

2. The discharge shall not cause a violation of the water quality standards of the receiving water.
3. The discharge shall remain free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall remain free from pollutants which produce odor, color, taste or turbidity in the receiving waters which is not naturally occurring and would render it unsuitable for its designated uses.
4. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts. No biocides, including chlorine compounds, may be used without explicit approval from the EPA and NHDES-WD.
5. The discharge shall not cause the turbidity in the receiving water to exceed naturally occurring conditions by 10 Nephelometric Turbidity Units (NTU) as specified in Env-Wq 1703.11 (b) and (d).
6. The Regional Administrator reserves the right to modify, or alternatively, revoke and reissued this permit to incorporate additional toxicity testing requirements, including chemical specific limits such as for metals, if the results of the toxicity tests indicate the discharge causes an exceedance of any State water quality criterion. Results from these toxicity tests are considered "new information" and the permit may be modified as provided in the 40 Code of Federal Regulations (CFR) §122.62(a)(2).
7. All existing manufacturing, commercial, mining, and silvicultural dischargers in accordance with 40 CFR §122.42 must notify the EPA and NHDES-WD as soon as they know or have reason to believe (as summarized):
 - 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 (as defined in 40 CFR §122.2) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) One hundred micrograms per liter (100 ug/L);

- (2) Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
 - (4) Any other notification level established by the 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":
 - (1) Five hundred micrograms per liter (500 ug/L);
 - (2) One milligram per liter (1 mg/L) for antimony;
 - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
 - (4) Any other notification level established by the 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.
8. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under sections 301(b)(2)(C) and (d), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
- a. Contains different conditions or is otherwise more stringent than the effluent limitation in the permit; or
 - b. Controls any pollutants not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

B. MONITORING AND REPORTING

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

- a. Submittal of Reports Using NetDMR

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

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

Notification required herein or in Part II shall be submitted to EPA and NHDES at the address listed in Part I.B.1.c below.

- b. Submittal of NetDMR Opt-Out Requests

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

U.S. Environmental Protection Agency
Water Technical Unit
Attn: NetDMR Coordinator
5 Post Office Square, Suite 100 (OES04-1)
Boston, MA 02109-3912

and

New Hampshire Department of Environmental Services
Water Division; Wastewater Engineering Bureau
Attn: Compliance Supervisor
29 Hazen Drive
P.O. Box 95
Concord, New Hampshire 03302-0095

c. Submittal of Reports in Hard Copy Form

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

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

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

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

2. Any verbal reports, if required in Parts I and/or II of this permit, shall be made to both EPA and to NHDES-WD.

C. STATE PERMIT CONDITIONS

1. The permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).
2. This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13. Each Agency shall have the

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

FRESHWATER CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic (and modified acute) toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic and modified acute toxicity data shall be reported as outlined in Section VIII. The chronic fathead minnow and daphnid test data can be used to calculate an LC50 at the end of 48 hours of exposure when both acute (LC50) and chronic (C-NOEC) test endpoints are specified in the permit.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at <http://www.epa.gov/waterscience/WET/> . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6° C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

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

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

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

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

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

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

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

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
One Congress St., Suite 1100
Boston, MA 02114-2023

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
One Congress Street, Suite 1100
Boston, MA 02114-2023

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

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

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

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

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

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

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

V.1.a. Use of Concurrent Reference Toxicity Testing

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

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

<u>Parameter</u>	Effluent	Receiving Water	ML (mg/l)
Hardness ^{1, 4}	x	x	0.5
Total Residual Chlorine (TRC) ^{2, 3, 4}	x		0.02
Alkalinity ⁴	x	x	2.0
pH ⁴	x	x	--
Specific Conductance ⁴	x	x	--
Total Solids ⁶	x		--
Total Dissolved Solids ⁶	x		--
Ammonia ⁴	x	x	0.1
Total Organic Carbon ⁶	x	x	0.5
Total Metals ⁵			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02

Other as permit requires

Notes:

1. Hardness may be determined by:

(May_2007)

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 2340B (hardness by calculation)
 - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 4500-CL E Low Level Amperometric Titration
 - Method 4500-CL G DPD Colorimetric Method
 - USEPA 1983. Manual of Methods Analysis of Water and Wastes
 - Method 330.5
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at

<http://www.epa.gov/waterscience/methods/wet/pdf/wetguide.pdf> . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value, for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.
- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: [Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program](#) can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater than the PMSD lower bound, then the treatment is considered statistically significant.
- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
 - Facility name
 - NPDES permit number
 - Outfall number
 - Sample type
 - Sampling method
 - Effluent TRC concentration
 - Dilution water used
 - Receiving water name and sampling location
 - Test type and species
 - Test start date
 - Effluent concentrations tested (%) and permit limit concentration
 - Applicable reference toxicity test date and whether acceptable or not
 - Age, age range and source of test organisms used for testing
 - Results of TAC review for all applicable controls
 - Test sensitivity evaluation results (test PMSD for growth and reproduction)
 - Permit limit and toxicity test results
 - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

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

NPDES PART II STANDARD CONDITIONS
(January, 2007)

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

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

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

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

2. Permit Actions

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

3. Duty to Provide Information

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

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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.

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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.

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- (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

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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

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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

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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.

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- 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.

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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.

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- (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

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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

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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).

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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.

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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.

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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.

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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.

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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,

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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.

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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.

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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 of 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 of 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.

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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.

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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.)

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(January, 2007)

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

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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.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA NEW ENGLAND
OFFICE OF ECOSYSTEM PROTECTION
5 POST OFFICE SQUARE - SUITE 100
BOSTON, MASSACHUSETTS 02109-3912**

FACT SHEET

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

PUBLIC NOTICE START/FINISH DATE: 7/13/12 - 8/11/12

PUBLIC NOTICE NUMBER: NH-010-12

NPDES PERMIT NO.: NH0001619

NAME AND ADDRESS OF APPLICANT:

U.S. Army Corps of Engineers
Engineer Research and Development Center
3909 Halls Ferry Road
Vicksburg, Mississippi 39180

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

U.S. Army Corps of Engineers
Engineer Research and Development Center
Cold Regions Research and Engineering Laboratory
72 Lyme Road
Hanover, New Hampshire 03755-1290

RECEIVING WATER: Connecticut River

CLASSIFICATION: Class B

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

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for the reissue of its NPDES permit to discharge non-contact cooling water effluent into the Connecticut River, the designated receiving water. The U.S. Army Corps of Engineers (USACE) Engineer Research subordinate command, the Engineer Research and Development Center (ERDC), owns and operates the Cold Regions Research and Engineering Laboratory (CRREL), at the above named site. CRREL conducts research and engineering applicable to the world's cold regions for the Army Corps of Engineers, U.S. Army and the Department of Defense. Storm water runoff is also directed to the same discharge piping used by the cooling water system. The location of the CRREL facility, outfall and the receiving water are shown in Attachment A.

The existing NPDES permit contains limitations on non-contact cooling water discharged to the CRREL's large capacity chilling equipment. Non-contact cooling water is water employed to reduce

or control the temperature of an industrial process. This cooling water does not come in direct contact with any raw material, intermediate product, a waste product (other than heat) or finished product. A NPDES Permit is required when non-contact cooling water is discharged to the surface waters of the United States. *See* Title 40 Code of Federal Regulations (C.F.R.) §§ 122.1(b)(1), 122.2. A schematic of CRREL's non-contact cooling water system is shown on Attachment B.

The water that CRREL uses for non-contact cooling water is drawn from five groundwater wells. All these wells are located on the CRREL facility. The combined discharge to the Connecticut River of the cooling water drawn from these wells has an averaged a flow rate of 0.68 million gallons per day (MGD) since May 2005.

Facilities discharging non-contact cooling water may apply for coverage under the Non-Contact Cooling Water General Permit. The owner/operator files a Notice of Intent (NOI) with both the EPA and NHDES. EPA and NHDES will review the NOI and the facility will receive written notification from EPA stating whether coverage under the general permit is approved. CRREL, however, cannot apply for coverage under the general permit. The general permit's flow limit is 1.0 million gallons per day (MGD), and CRREL's non-contact cooling water demand exceeds that limit. Additionally, the groundwater drawn from the wells that provide non-contact cooling water is contaminated with trichloroethylene (TCE). Since there are no provisions or limits in the general permit for TCE contaminated non-contact cooling water, CRREL cannot file an NOI.

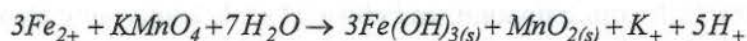
Four of the five groundwater wells at CRREL's facility are contaminated with TCE. TCE is a nonflammable, colorless liquid which is mainly used as a solvent in the industrial degreasing of metals, with secondary solvent use in adhesive, paint and polyvinyl chloride production, and as a low-temperature heat transfer fluid. In late October 1990, the Air Force notified the CRREL that experiments conducted in 1984-85 could have caused potential ground water contamination with tetrachloroethylene (PCE). Based on this notification, the water from the industrial cooling wells and a nearby municipal water supply were analyzed for PCE. Although the tests proved negative for PCE, they revealed elevated levels of TCE in the non-contact cooling water supply Wells No. 1, No. 2, No. 4 and No. 5; while Well No. 3 shows no sign of contamination. Additional sites on CRREL property were tested for TCE contamination, and elevated TCE levels were also identified at the site of a previously buried TCE tank.

TCE was the secondary refrigerant of CRREL's main laboratory from 1960 until 1987. During this period, TCE was not known as a suspected carcinogen, and so the chemical was not handled as a hazardous waste. Quantities lost in day-to-day leaks in the machinery were never recorded. Also during this time, it was not uncommon for used TCE to be discarded directly into the ground. Several significant events may have also contributed to elevated TCE levels in the ground. A gasket blow-out of an evaporator caused over 6000 gallons of TCE to spill onto the floor of the machine room in May 1970. Although most of the liquid was evacuated to a storage tank, much of it went down the floor drains, which lead to the sewer system. In July 1970, an above-ground TCE tank exploded, and approximately 3000 gallons of TCE was flushed into the storm system by the fire department (this was the accepted practice at that time). Finally, in 1978, the experimental ice well was shut down for repairs to the heat exchanger. The water in the well, which was noted to be contaminated with TCE, was pumped, and was eventually poured into the storm drain or into the ground with the rest of the CRREL's discarded TCE.

Presently, there is virtually no TCE being used or stored on CRREL property. Almost all of the TCE was removed from CRREL in 1987, when the refrigeration system was modified to use Freon. On January 27, 1991, EPA granted CRREL an emergency exclusion from the requirement for an NPDES permit in order to discharge contaminated groundwater. The emergency exclusion was in accordance with 40 C.F.R. § 122.3(d) and initially authorized the discharge of untreated groundwater in order to depress the groundwater table; therefore, preventing the contaminated groundwater from damaging a nearby Hanover, NH public water supply. The exclusion also allowed the continued use of CRREL's refrigeration systems, which are necessary for the laboratory's mission of conducting research applicable to the world's cold regions for the Army Corps of Engineers, U.S. Army and the Department of Defense. Additionally, the exclusion required the design and construction of a treatment system by January 1, 1992 which would achieve effluent TCE limits of 5.0 µg/l. This limit was based on a Best Professional Judgment (BPJ) using the maximum contaminant level (MCL) of TCE in drinking water.

The remediation method to treat the TCE contamination which CRREL employs is a packed tower groundwater treatment plant. The plant is designed to strip volatile organic gases, such as TCE, out of water. Water from the contaminated wells is introduced through the top of tower. The tower is packed with a media consisting of ping pong sized, plastic balls. These balls have an irregular-surface to maximize the surface area. At the bottom of the tank air is blown in. An air/water counter flow is established which optimizes conditions for vaporization or evaporation of TCE forced out of the water by the air flow. It has been observed that the treatment process causes a slight increase of the treated groundwater's pH. Carbon dioxide, injected after the air stripping process, is used to lower the water's pH. Water, now stripped of TCE, is pumped as non-contact cooling water into CRREL's large capacity chilling equipment. The air, after passing through the packed tower, is cleaned by flowing through granular-activated carbon before being released to the atmosphere.

Additionally, the water drawn from CRREL's non-contact cooling water system's supply wells has high iron content. As protective maintenance, potassium permanganate (KMnO₄) is added to the water drawn from the wells to remove iron as depicted by the chemical equation:



Potassium permanganate is used as the treatment chemical because it is a stable chemical and does not produce adverse byproducts. After the addition of the potassium permanganate the well water passes through an ion exchange green sand filter where iron hydroxide and manganese oxide are removed.

CRREL's existing permit was issued on February 17, 2005, and became effective on May 1, 2005. That permit expired on April 30, 2010. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed an application for the reissue of CRREL's permit within the prescribed time period as per 40 C.F.R. § 122.6.

II. Description of Discharge.

Quantitative descriptions of those effluent parameters, Non-Contact Cooling Water (NCCW) Flow,

Temperature, pH, Trichloroethylene, that are limited and monitored in the existing permit are presented in Attachment C. The data was compiled from monthly Discharge Monitoring Report (DMR) data submitted by the facility to the EPA and New Hampshire Department of Environmental Services, Water Division (NHDES-WD). In addition, the permittee submitted quantitative data with current application (FORMs 1 and 2C) which along with the DMR data (on file at the EPA Boston office) were used to develop the draft permit effluent limitations. The draft permit contains limits for Non-Contact Cooling Water Flow, Temperature, pH, Trichloroethylene, and a reporting requirement for Whole Effluent Toxicity (WET).

III. Description of Receiving Water

The Connecticut River in the vicinity of the CRREL outfall is designated as Class B waterbody pursuant to New Hampshire Statutes RSA 485-A:8. Class B waterbodies are considered suitable for fishing, swimming and other recreational purposes, and for use as a water supply after adequate treatment.

The effluent from CRREL's outfall discharges into Connecticut River at a 1760 acres impoundment created by the Wilder Dam. The impoundment is known locally as Wilder Lake. Wilder Lake (Assessment unit NHLAK801040402-03) is listed as marginally impaired on New Hampshire Department of Environment Services' (NHDES's) *Final 2010 Section 303(d) Surface Water Quality List* submitted to EPA for approval. Each Assessment Unit has six designated use descriptions; Aquatic Life, Drinking Water After Adequate Treatment, Fish Consumption, Primary Contact Recreation, Secondary Contact Recreation and Wildlife. Aquatic Life is rated "Poor" for pH from atmospheric deposition (acidity) and "Likely Bad" for aluminum, copper, lead and nickel. The use of Wilder Lake as "Drinking Water After Adequate Treatment" is rated as "Good" (Fully Supported). Fish Consumption is rated "Poor" (Not Support, Marginal) due to atmospheric deposition of mercury (a state-wide listing). Primary Contact Recreation, i.e., swimming, is rated "Poor" because of an undetermined *Escherichia coli* source. Secondary Contact Recreation, i.e., boating, is rated as "Good." Wildlife is labeled as "No Data." According to NHDES, a total maximum daily load (TMDL) is scheduled to assess Aquatic Life pH impairment in 2021, Fish Consumption mercury impairment in 2017 and Primary Contact Recreation *Escherichia coli* impairment in 2023.

IV. Limitations and Conditions

Effluent limitations, monitoring requirements, and any implementation schedule (if required) are found in Part I of the draft NPDES permit. The basis for each limit and condition is discussed in Section VI of this Fact Sheet.

V. Permit Basis: Statutory and Regulatory Authority

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a NPDES permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water-quality based effluent limitations and other requirements including monitoring and reporting. During development of the CRREL draft permit and Fact Sheet, EPA considered the most recent technology-based treatment requirements, water quality-based requirements, and all limitations and requirements in the current/existing permit.

The regulations governing the EPA NPDES permit program are generally found at 40 C.F.R. Parts 122, 124, 125, and 136. The general conditions of the draft permit are based on 40 C.F.R. § 122.41 and consist primarily of management requirements common to all permits. The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308(a) of the CWA in accordance with 40 C.F.R. §§ 122.41(j), 122.44(i), and 122.48.

A. Technology-based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (*See* 40 C.F.R. Part 125, Subpart A). Subpart A of 40 C.F.R. Part 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA promulgated effluent limitations and, in the absence of promulgated technology-based effluent guidelines, Best Professional Judgment (BPJ) for case-by-case determinations of effluent limitations under Section 402(a)(1)(B) of the CWA.

In general, statutory deadlines for meeting technology-based guidelines (effluent limitations) established pursuant to the CWA have expired. Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit.

B. Water Quality-based Requirements

Water quality-based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water quality standards. *See* Section 301(b)(1)(C) of the CWA. A water quality standard consists of three elements: (1) beneficial designated use or uses for a waterbody or a segment of a waterbody; (2) a numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) an antidegradation requirement to ensure that once a use is attained it will not be eroded.

Receiving water requirements are established according to numerical and narrative standards in the state's water quality standards adopted under state law for each stream classification. When using chemical-specific numeric criteria to develop permit limits, both the aquatic-life acute and chronic criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. Aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 C.F.R. § 122.44(d)(1) and are implemented under 40 C.F.R. §§ 122.45(d) and (f). Therefore, the Region establishes maximum daily and average monthly limits for chemical-specific toxic pollutants based, in part, on a reasonable measure of the facility's actual or projected flow rates on an average monthly and a maximum daily basis for all production-based facilities that have a continuous discharge. Also, the dilution provided by the receiving water is factored into this process. Furthermore, narrative criteria from the state's water quality standards are often used to limit toxicity in discharges where: (1) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (2) toxicity cannot be traced to a specific pollutant.

The NPDES permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. See C.F.R. § 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers: (1) existing and planned controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit's reissuance application, Monthly DMRs, and State and Federal Water Quality Reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in Section 3 of the *Technical Support Document for Water Quality-based Toxics Control*, March 1991, EPA/505/2-90-001; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire statutes and administrative rules (50 RSA 485-A:8, Env-Wq 1705.02), available dilution for discharges to freshwater receiving waters is based on a known or estimated value of the annual seven consecutive-day mean low flow at the 10-year recurrence interval (7Q10) for aquatic life or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water. Furthermore, 10 % of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Wq 1705.01. The New Hampshire Code of Administrative Rules Chapter Env-Wq 1700 Surface Water Quality Regulations were readopted and became effective on May 21, 2008. Hereinafter, these Regulations are referred to as the NH Standards.

C. Antibacksliding

EPA's antibacksliding provision as identified in Section 402(o) of the Clean Water Act and at 40 C.F.R. § 122.44(l) prohibits the relaxation of permit limits, standards, and conditions unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued. Antibacksliding provisions apply to effluent limits based on technology, water quality, BPJ and State Certification requirements. Relief from antibacksliding provisions can only be granted under one of the defined exceptions [See 40 C.F.R. § 122.44(l)(2)(i)]. All limits included in the Draft Permit are at least as stringent as those in the previous permit.

D. Antidegradation

The New Hampshire Antidegradation Policy, found at Env-Wq 1708, applies to any new or increased activity that would lower water quality or affect existing or designated uses, including increased loadings to a waterbody from an existing activity. The antidegradation regulations focus on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. The CWA requires that EPA obtain State Certification which states that all water quality standards will be satisfied. The permit must conform to the conditions established pursuant to a State Certification under Section 401 of the CWA (40 C.F.R. §124.53 and §124.55). EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. §122.44(d).

VI. Explanation of the Permit's Effluent Limitation(s)

A. Conventional Pollutants

Flow

Although not considered a pollutant, the cooling water flow rate determines the heat load at a given temperature, and the mass loadings of other pollutants. The flow rate, also, determines the dilution factor in the receiving water. The dilution factor is used to establish water quality based limits. Flow is, therefore, regulated to control the impact of any pollutant entrained in the non-contact cooling water. The flow limit, 1.9 million gallons per day (MGD), in the Draft Permit remains unchanged from the existing permit.

pH

The pH limits; i.e., range, of 6.5 to 8.0 S.U. for New Hampshire draft NPDES permits are based upon applying New Hampshire Code of Administrative Rules Part Env-Wq 1703.18(b) at the point of discharge with no allowance for dilution. Since the NHDES-WD requires pH limits to be satisfied at the end-of-pipe with no allowance for dilution, the pH limitations are also based on State Certification requirements under section 401(d) of the ACT. See 40 C.F.R. §§124.53 and 124.55.

NHDES-WD may, in certain instances, recommend to the EPA a pH limit range that is more expansive than 6.5 to 8.0 S.U. contained in a previously issued permit. A change in the pH range would be considered if the applicant can demonstrate, to the satisfaction of NHDES-WD, that the in-stream NH Standards for pH would be protected. However, the pH limit range cannot be less restrictive than 6.0 - 9.0.

The demonstration study involves collecting samples of the effluent and the receiving water. The pH of the effluent sample is adjusted to either a pH of 6.0 or 9.0 S.U.; depending on whether the permittee is seeking to adjust the pH limit to 6.0 or 9.0 S.U. The adjusted effluent volume is further adjusted to represent five different percentages of the facility's dilution factor. These five different samples are mixed with the receiving water samples and the adjusted pH effluent samples effect on the receiving water's pH is recorded.

Upon submission of a demonstration study, NHDES-WD reviews the study's methodology and results. The results of the study must show that, as long as the pH of the facility's effluent remains in the range of 6.0 to 9.0 S.U., the pH of the receiving water remains between the range of 6.5 to 8.0 S.U. or as naturally occurring. NHDES-WD's review confirms whether the study's procedures are valid and the results demonstrate the facility's effluent will not adversely affect the New Hampshire in stream water quality standards for pH. If the demonstration study's result is accepted, NHDES-WD will inform the permittee by letter that NHDES supports a relaxation of the pH limit. After receipt of NHDES-WD's letter the permittee may request in writing to the EPA that the pH limit be relaxed. A NPDES permit's pH limit range can be relaxed in accordance with 40 C.F.R. 122.44(l)(2)(i)(B) because the modification will be based on new information not available at the time of this permit's issuance. This new information is the results from the pH demonstration study that justifies the application of a less stringent pH effluent limitation.

The pH limits, 6.5 to 9.0 Standard Units (S.U.), in the Draft Permit remain unchanged from the existing permit. The pH limit range contained in the Draft Permit is based on a pH study that demonstrated that CRREL's effluent discharge does not cause a degradation of the in-stream NH

Standards for pH. In a letter dated August 6, 2007, NHDES-WD validated CRREL's pH demonstration study and supported a pH adjustment for CRREL's permit. CRREL requested EPA modify the permit's pH limits to 6.5 to 9.0 S.U. from 6.5 to 8.0 S.U. by a letter dated August 10, 2007. EPA concurred with NHDES-WD's decision and granted the modification of CRREL's pH limit to 6.5 to 9.0 S.U. by a letter dated September 4, 2007.

Typically, when a New Hampshire NPDES permit is reissued, even if the permittee's preceding permit received a pH modification, the reissued permit contains the NH Standard pH limits of 6.5 to 8.0 S.U. The permittee is required to conduct a new pH demonstration study to have their facility's pH limits modified. The reason for requiring a new pH demonstration study is to ensure the pH range of the effluent discharged from sewage or industrial treatment works has not shown an increase in variability; therefore, presenting a potential harm to the receiving water.

A statistical analysis of CRREL's monthly pH data clearly shows low pH variability in CRREL's effluent. Referring to Attachment C, since May 2005 the low monthly pH recorded reading has a standard deviation of 0.19, and the monthly high pH recorded reading has a standard deviation of 0.14. These small standard deviations for both the lower and upper pH recorded readings confirm the low pH variability of CRREL's effluent. Additionally, there have been no violations of the 6.5 to 9.0 S.U. pH limits since October 2007. Based on the low variability of the pH in CRREL's effluent discharge, EPA has made a decision to retain the existing permits pH range of 6.5 to 9.0 S.U., and not to require any pH demonstration study.

B. Non-Conventional and Toxic Pollutants

Temperature

The Connecticut River in the Hanover, NH area is classified as a warm water fishery by the New Hampshire Fish and Game Department (NHF&G). The NHF&G in New Hampshire's Non-Contact Cooling Water General Permit has approved for a warm water fishery a maximum daily temperature limit of 83°F. Since this general permit authorizes discharges to receiving waters with low dilutions, it follows that the 75°F temperature limit for CRREL's effluent, which discharges to a receiving water that provides considerable dilution, meets the requirement contained in NH RSA 485-A:8 II. This Statute requires that "Any stream temperature increase associated with the discharge of ... cooling water ... shall not be such to appreciable interfere with the uses assigned to this class."

EPA and NHDES consider the 75°F maximum daily temperature limit to be protective of the receiving waters. Referring to Attachment C, the maximum temperature for CRREL for this permit cycle has not exceeded 71°F. Accordingly, the maximum daily temperature limit of 75°F was carried over to the Draft Permit.

Dilution Factor

The Non-Conventional and Toxic Pollutants section of a Fact Sheet supporting New Hampshire NPDES draft permits normally contains a Dilution Factor paragraph. The dilution factor is used to calculate WET test effluent limits and water quality-based limits for toxic pollutants. A dilution factor, however, is not required to determine any effluent limitations for CRREL's draft permit. The

reason is the only known toxic pollutant in CRREL's effluent is TCE. As explained in the succeeding section, the effluent limits determined for TCE are technology-based not water quality-based. There is also no WET limit which must be calculated; just a reporting requirement of the WET testing results.

A dilution factor, though not directly required to determine any water quality-based effluent limits at CRREL, still has been calculated. The calculation ensures that any technology-based effluent limits will also meet NH water quality-based effluent limits after the dilution factor is applied. That calculation is contained in Attachment D. In the advent toxicity is discovered in CRREL's effluent at a later date, a dilution factor will be available. This will facilitate revision of the CRREL NPDES permit in order to impose more stringent effluent limits, if required.

Trichloroethylene (TCE)

On January 27, 1991, EPA granted CRREL an emergency exclusion from the requirement for an NPDES permit in order to discharge contaminated groundwater. The emergency exclusion was in accordance with 40 C.F.R. § 122.3 (d) and initially authorized the discharge of untreated groundwater in order to depress the groundwater table and prevent the contaminated groundwater from contaminating a nearby Town of Hanover water supply. The emergency exclusion also allowed the continued use of CRREL's refrigeration systems, which are necessary to support the laboratory's research and engineering mission applicable to the world's cold regions for the Army Corps of Engineers, U.S. Army and the Department of Defense. The exclusion required the design and construction of a treatment system by January 1, 1992 which could achieve effluent TCE limits of 5 µg/l. Again, this limit was based on a Best Professional Judgment (BPJ) using the maximum contaminant level (MCL) of TCE in drinking water.

The permittee has monitored the TCE treatment facility's influent and effluent TCE concentrations once per month since the exclusion was issued. The data shows that the groundwater pumped to the treatment facility still has elevated concentrations of TCE, which are effectively removed by the treatment facility. The TCE concentrations began to increase in 2006 and peaked in October 2006. As was discovered by a NPDES on-site inspection at CRREL in April 2007, the packed media in both air stripping towers had deteriorated. If the TCE treatment system was regularly inspected, the deterioration of packing media would have been identified in advance. Inspection and preventative maintenance of the TCE treatment system would have allowed timely repairs to the air stripping packing media; therefore, preventing an excursion of the TCE limit. 40 C.F.R. § 122.41(e) states, "the permittee shall at all times operate and maintain all facilities and systems treatment and control (and related appurtenances) which are installed by the permittee to achieve compliance with the conditions of the permit." Additionally, Part II, Standard Conditions for NPDES Permits, contains in Section B the requirement for proper operation and maintenance of all pollution treatment systems. After the repair of the air stripping equipment and replacement of the packing media, the TCE treatment facility has achieved (except for February and March 2008) the 5 µg/l limit imposed in the NPDES exclusion. A summary of the TCE data is found in Attachment C.

The EPA is required to consider technology and water quality requirements when developing permit limits. 40 C.F.R. Part 125, Subpart A, sets the criteria and the standards that the EPA must use to determine which technology based requirements, requirements under Section 301(b) of the Act and/or

requirements established on a case-by case basis under Section 402(a)(1) of the Act should be included in the a permit. Section 301(b)(2) of the CWA requires the application of Best Conventional Control Technology (BCT) for conventional pollutants and Best Available Technology Economically Achievable (BAT) for non-conventional pollutants. BCT and BAT requirements became effective on March 31, 1989.

The EPA has been developing Effluent Limitations Guidelines (ELGs) for existing industrial activities, as directed in the original Federal Water Pollution Control Act Amendments of 1972. Although many ELGs have been developed, no ELG has been established for the discharges of TCE contaminated groundwater. Because TCE is classified as a toxic pollutant (*See* 40 C.F.R. §401.15), the appropriate technology based standard is BAT, in accordance with Section 301(b)(2)(A) of the Clean Water Act. Accordingly, EPA has established a BAT effluent limitation for TCE based on best professional judgment (BPJ) as allowed in 40 C.F.R. §125.3(c)(2). A BAT limit for TCE has been established at 5 µg/l since the existing treatment system has essentially demonstrated that the limit is appropriate in consideration of those factors contained in 40 C.F.R. §125.3(d)(3).

The NH water quality criteria for TCE include aquatic life chronic criteria of 21,900 µg/l, acute criteria of 45,000 µg/l, and human health criteria of 2.7 µg/l for water and fish ingestion, and 81 µg/l for fish consumption only. The TCE effluent data shows that the effluent concentrations of TCE are well below the aquatic life criteria and the fish consumption human health criteria. Based on a dilution factor for protection of human health of 979.2 (*See* Attachment D) the NH water quality-based human health criteria for water plus fish ingestion is expected to be achieved very close to the discharge point given the afforded dilution in the Connecticut River. Since the technology-based limit of 5 µg/l is more restrictive and will result in attainment of all NH water quality criteria, the 5 µg/l has been carried over from the existing permit to the draft permit.

The draft permit also requires that TCE sampling of the treated groundwater be conducted at the discharge from the groundwater treatment system. This is the location where the NPDES exclusion required the sampling to be performed, and is an acceptable location under NPDES since it will ensure that the technology based limit for TCE is achieved with no dilution from downstream sources such as storm water. *See* 40 C.F.R. §122.45(h) and USEPA Permit Writers Manual, page 188.

Whole Effluent Toxicity

EPA's *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Whole Effluent Toxicity (WET) evaluates the interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. WET also measures the "Additive" and/or "Antagonistic" effects of individual chemical pollutants. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

New Hampshire law states that, "...all waters shall be free from toxic substances or chemical

constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. Surface Water Quality Regulations, PART Env-Ws 1703.21(a)). The federal NPDES regulations, 40 C.F.R. §122.44(d)(1)(v), require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity.

As required by the existing permit, two WET test were conducted and no toxicity was shown. EPA and NHDES-WD have determined that one WET test is required to confirm CRREL's effluent demonstrates no toxicity. Accordingly, the draft permit has a requirement to conduct a WET test 90 days after the receipt of the issued permit.

The WET test shall have both the LC50 and C-NOEC measured. LC50 is the concentration of non-contact cooling water (effluent) causing mortality to 50 percent (%) of the test organisms. C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing. The EPA and NHDES-WD will review the toxicity tests to determine compliance with the no toxics provision of the ACT.

If toxicity is found, the monitoring frequency and testing requirements may be increased. The permit may also be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements or chemical specific limits. These actions will occur if the Regional Administrator determines the NH Standards are not adequately enforced and users of the waterways are not adequately protected during the remaining life of the permit. Results of these toxicity tests are considered "new information not available at permit development"; therefore, the permitting authority is allowed to use said information to modify an issued permit under authority in 40 C.F.R. §122.62(a)(2).

C. Storm Water

Section 402(p) of the ACT requires that EPA issue permits for storm water discharges associated with industrial activity. This facility is involved with research and engineering (Standard Industrial Classification code No. 873 - Research and Testing Services) and is not classified as a Storm Water Discharge Associated with Industrial Activity within the meaning of 40 C.F.R. §122.26(b)(14). CRREL, therefore, does not have to apply for a storm water discharge permit. The draft permit requires that sampling of the discharge for all pollutants (except TCE) be performed on dry days to ensure that the discharge is not diluted with storm water.

D. Additional Requirements and Conditions

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR § 122.41(j), 122.44(i) and 122.48. The remaining conditions of the permit are based on the NPDES regulations 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

CRREL's draft NPDES permit states that all compliance samples must be collected "at a location prior to any commingling with storm water discharges." Non-contact cooling water (NCCW) is discharged into the same drain piping to which the facility's storm water and snow melt drain from multiple locations. CRREL's effluent is sampled at a manhole near the "Navy Pond," a location in the drainage system by which both the NCCW and storm water have combined. There is no one location readily accessible to sample the entire NCCW effluent before it becomes commingled with storm water. As an example, after NCCW leaves the Main Laboratory it enters the storm drain. A portion of that discharged NCCW is drawn from the storm drain for use in the DPW/Remote Sensing building. See Attachment B.

EPA's primary concern is the concentration level of trichloroethylene (TCE) in CRREL's effluent discharge, followed by the effluent's temperature and pH. NCCW supplied from Wells No. 1, 2, 4, and 5 are contaminated with TCE, Well No. 3 is free of TCE contamination. All water from Wells No. 1, 2, 4, and 5 enter the TCE treatment system before being used as NCCW. The draft permit requires sampling for TCE immediately after it is discharged from the TCE treatment system. The draft permit allows effluent temperature and pH sampling at a manhole near the "Navy Pond" at CRREL's facility. The effluent temperature and pH sampling must occur, at a minimum, 72-hours after the end of the last storm event. Taking effluent samples commingled with snowmelt is also prohibited. The following table compares the existing permits limited parameters to those of the draft permit.

Parameter	Existing Permit		Draft Permit	
	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	Continuous	Recorder	Continuous	Totalizer
Temperature	3/Week	Grab	3/Week	Grab
pH	3/Week	Grab	3/Week	Grab
TCE	1/Month	Grab	1/Month	Grab
WET	Two Tests	24-hour Composite	One Test	24-hour Composite

VII. Essential Fish Habitat and Endangered Species

Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq. (1998)), EPA is required to consult with the National Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or

undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define "essential fish habitat" as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. §1802 (10)). "Adversely impact" means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. §600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. §1855(b)(1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The Atlantic salmon (*Salmo salar*) is the only managed species with designated EFH in the Connecticut River. This section of the Connecticut River is classified as a Class B waterbody pursuant to New Hampshire Statutes RSA 485-A:8. Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other crucial functions, and for primary and secondary contact recreation.

Atlantic salmon are expected to be present during one or more life stages within the area which encompasses the discharge site. Although the last remnant stock of Atlantic salmon indigenous to the Connecticut River was believed to have been extirpated over 200 years ago, an active effort has been underway throughout the Connecticut River system since 1967 to restore this historic run. Atlantic salmon juvenile or adult life stages may pass in the vicinity of the discharge on the mainstem of the Connecticut River in the Wilder Lake Impoundment. The area of the discharge on the river mainstem in the impoundment is not judged to be suitable for spawning, which is likely to occur in tributaries where the appropriate gravel or cobble riffle substrate can be found.

EPA has determined that the limits and conditions contained in this draft permit minimize adverse effects to Atlantic Salmon EFH for the following reasons:

- This is a reissuance of an existing permit;
- The dilution factor (273) is high;
- EPA and NHDES consider the 75°F maximum daily temperature limit to be protective of the receiving waters.
- The Connecticut River is approximately 375 feet wide in the vicinity of the CRREL discharge at near Hanover, NH, providing a large zone of passage for migrating Atlantic salmon that is unaffected by the discharge;
- Acute toxicity tests will be conducted once on daphnids (*Ceriodaphnia dubia*) and fathead minnows (*Pimephales promelas*). Current results of the toxicity tests are in compliance with the permit limits;
- The draft permit prohibits violations of the state water quality standards.
- After required treatment, effluent data show that effluent concentrations of TCE are well below the aquatic life criteria and the fish consumption human health criteria.
- The facility withdraws no water from the Connecticut River, so no life stages of Atlantic salmon are vulnerable to impingement or entrainment from this facility.
- The effluent limitations and conditions in the draft permit were developed to be protective of all aquatic life.

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

As the federal agency charged with authorizing the discharge from this facility, EPA has submitted the Draft Permit and this fact sheet, along with a cover letter, to NMFS Habitat Division for their review.

Endangered Species

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

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

EPA has reviewed the federal endangered or threatened species of fish, wildlife, or plants to determine if any such listed species might potentially be impacted by the issuance of this NPDES permit. The dwarf wedgemussel (*Alasmidonta heterodon*) was the only federally protected species associated with the general area of the receiving water of the facility. The dwarf wedgemussel (DWM) was added to the endangered species list on March 4, 1990. Presently in New Hampshire, the dwarf wedge mussels' known population has been identified in a number of locations along the mainstem of the Connecticut River. The facility discharges into the mainstem of the Connecticut River at Hanover, NH. Based on the USFWS maps titled "*The Dwarf Wedgemussel Waters of the Connecticut River in Vermont and New Hampshire*" (http://www.fws.gov/newengland/pdfs/mid_NH_VT_DWM.pdf), the facility discharge is located approximately 4.5 miles downstream from the DWM designation in the Connecticut River at Thetford, VT / Lyme, NH and approximately 5 miles upstream from the Hartford, VT / Lebanon, NH DWM designation. Based on the large dilution factor calculated for the discharge from CRREL, the discharge plume is judged to be fully mixed well before the downstream designated area is reached and is not thought to have any detectable influence in the Connecticut River segments with DWM designation.

Based on this evaluation and the expected distribution of the DWM, EPA has determined that there are no DWM in the action area and that the project will have no effect on the species. Therefore, consultation under Section 7 of the ESA with USFWS is not required.

VIII. Monitoring and Reporting

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

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

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

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

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

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

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

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the draft permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format. Hard

copies of DMRs must be postmarked no later than the 15th day of the month following the completed reporting period.

IX. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate NH Standards or waives its right to certify as set forth in 40 CFR §124.53.

Upon public noticing of the draft permit, EPA is formally requesting that the State's certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The NHDES-WD, Wastewater Engineering Bureau is the certifying authority. EPA has discussed this draft permit with the Staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act, Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issue, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition.

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

X. Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

John Paul King (King.John@epa.gov)
U.S. Environmental Protection Agency
Office of Ecosystem Protection
Industrial Permits Branch (OEP06-1)

5 Post Office Square, Suite 100 (CIP)
Boston, MA 02109-3912

Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the draft permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

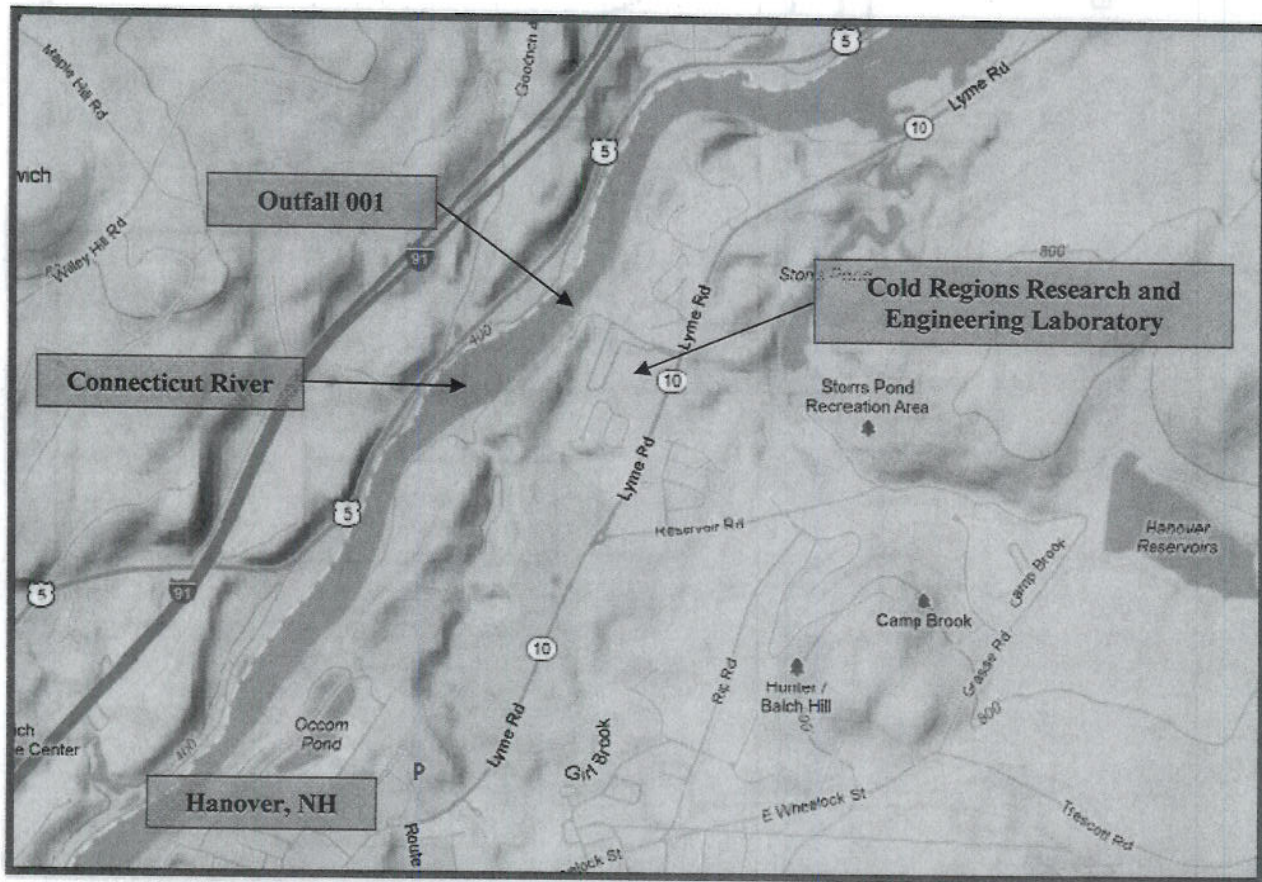
XI. EPA Contact

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

John Paul King (King.John@epa.gov)
U.S. Environmental Protection Agency
Office of Ecosystem Protection
Industrial Permits Branch (OEP06-1)
5 Post Office Square, Suite 100 (CIP)
Boston, MA 02109-3912
Telephone: (617) 918-1295

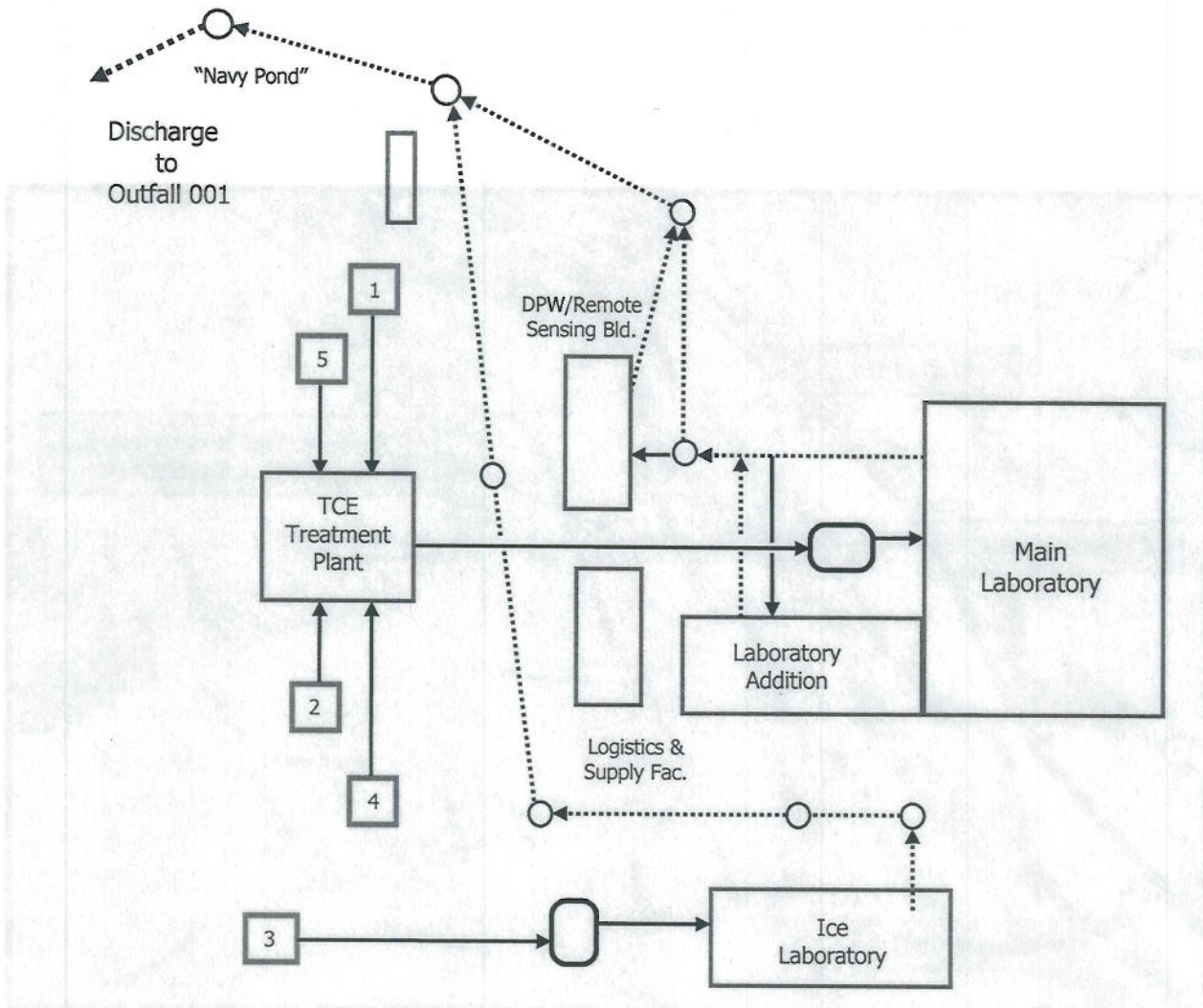
Date: 07.02.12

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

ATTACHMENT A**Map Location
Cold Regions Research and Engineering Laboratory
Facility and Outfall 001 Location**

ATTACHMENT B

Schematic of Non-Contact Cooling Water Flow Cold Regions Research and Engineering Laboratory



LEDGEND

-  **Water Reservoir**
-  **Groundwater Well**
-  **Manhole Access**
-  **Supply Pipeline**
-  **Discharge Pipeline**

ATTACHMENT C¹

EFFLUENT CHARACTERISTICS AT OUTFALL 001

MONTHLY MONITORING PERIOD END DATE	Flow (MGD)		pH (s.u.)		Water Temperature (deg F)		Trichloro- ethylene (ug/L)
	Average Monthly	Maximum Daily	Minimum	Maximum	Minimum	Maximum	Maximum Daily
5/31/2005	0.33	0.40	7.6	8.0	56.7	59.0	2
6/30/2005	0.75	1.01	7.8	8.0	57.8	60.0	2
7/31/2005	0.99	1.30	7.9	8.1	58.7	62.6	2
8/31/2005	0.87	1.15	7.8	8.1	58.6	60.8	3
9/30/2005	0.77	1.01	7.7	7.9	57.6	59.0	3
10/31/2005	0.63	0.85	7.7	7.9	56.4	60.8	2
11/30/2005	0.76	0.90	7.4	7.8	48.9	53.6	4
12/31/2005	0.58	0.79	7.6	7.9	50.7	51.8	2
1/31/2006	0.58	0.68	7.7	8.1	51.0	51.8	2
2/28/2006	0.59	0.71	7.6	7.9	51.1	51.8	2
3/31/2006	0.64	0.90	7.6	7.9	51.7	53.6	2
4/30/2006	0.71	0.93	7.6	7.9	52.9	57.2	3
5/31/2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6/30/2006	0.84	1.14	7.5	7.9	57.8	64.4	2.1
7/31/2006	0.99	1.20	7.6	8.0	59.4	62.6	6
8/31/2006	0.87	1.16	7.9	8.2	57.7	62.6	2.1
9/30/2006	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/31/2006	0.89	1.16	7.8	8.0	52.7	57.2	29
11/30/2006	0.68	0.99	7.7	8.0	51.1	51.8	4.5
12/31/2006	0.62	0.97	7.3	7.9	49.9	51.8	4
1/31/2007	0.87	0.99	7.7	7.9	50.9	53.6	2
2/28/2007	0.8	0.95	7.7	8.1	49.9	51.8	2
3/31/2007	0.83	1.10	N/A	7.9	49.9	53.6	2
4/30/2007	0.77	1.22	7.7	N/A	51.5	55.4	2
5/31/2007	0.97	1.46	7.7	8.1	54.0	59.0	2
6/30/2007	0.97	1.49	7.6	8.0	56.8	60.8	2
7/31/2007	1.04	1.39	7.8	8.0	57.9	60.8	2
8/31/2007	0.8	1.01	7.8	8.0	59.8	64.4	2
9/30/2007	0.68	1.01	7.7	8.1	59.8	62.9	2
10/31/2007 ¹	0.49	0.69	7.8	7.9 ¹	57.1	59.7	2
11/30/2007	0.49	0.98	7.6	7.9	53.0	59.7	2
12/31/2007	0.69	0.86	7.3	8.0	49.5	50.9	4
1/31/2008	0.7	0.99	7.5	7.7	50.2	53.2	4
2/29/2008	0.72	1.01	7.6	7.8	49.8	51.0	9
3/31/2008	0.53	0.79	7.6	7.8	50.7	52.3	9
4/30/2008	0.5	0.78	7.5	7.7	54.3	57.9	4
5/31/2008	0.43	0.86	7.5	7.9	57.5	62.7	5
6/30/2008	0.56	1.13	7.5	7.9	59.3	66.5	2
7/31/2008	0.77	1.09	7.6	7.9	58.9	60.9	2
8/31/2008	0.66	0.91	7.6	7.9	58.2	59.3	2
9/30/2008	0.64	1.00	7.6	7.9	56.3	60.2	2

ATTACHMENT C¹ (cont.)

EFFLUENT CHARACTERISTICS AT OUTFALL 001

MONTHLY MONITORING PERIOD END DATE	Flow (MGD)		pH (s.u.)		Water Temperature (deg F)		Trichloro- ethylene (ug/L)
	Average Monthly	Maximum Daily	Minimum	Maximum	Minimum	Maximum	Maximum Daily
10/31/2008	0.28	0.41	7.7	7.9	56.0	59.9	2
11/30/2008	0.36	0.70	7.8	8.1	54.0	59.3	2
12/31/2008	0.51	0.83	7.8	7.9	50.0	52.3	2
1/31/2009	0.71	1.10	7.4	7.8	50.0	51.0	2
2/28/2009	0.73	0.97	7.6	7.8	49.2	50.3	2
3/31/2009	0.78	1.10	7.4	7.7	50.0	52.0	2
4/30/2009	0.76	0.95	7.5	7.7	51.0	55.0	2
5/31/2009	0.84	1.10	7.5	7.9	53.2	54.7	2
6/30/2009	0.72	1.00	7.7	7.9	55.0	57.0	2
7/31/2009	0.88	1.25	7.7	7.8	55.0	58.0	2
8/31/2009	0.87	1.13	7.4	7.8	57.2	59.0	2
9/30/2009	0.8	1.08	7.5	7.8	54.3	57.7	2
10/31/2009	0.67	0.89	7.6	7.8	54.4	55.6	2
11/30/2009	0.31	0.68	7.6	7.8	51.8	52.7	2
12/31/2009	0.37	0.83	7.0	7.8	51.4	60.9	2
1/31/2010	0.47	0.82	7.0	7.7	49.4	51.4	2
2/28/2010	0.78	0.97	7.3	7.8	49.9	51.2	2
3/31/2010	0.6	0.89	7.5	7.8	52.0	57.0	2
4/30/2010	0.3	0.37	7.1	7.7	56.8	60.8	2
5/31/2010	0.41	0.87	7.1	8.2	57.8	63.8	2
6/30/2010	0.79	1.04	7.8	8.1	57.7	63.5	2
7/31/2010	0.83	1.10	7.6	7.8	59.4	63.5	2
8/31/2010	0.88	1.06	7.7	7.9	56.8	58.2	2
9/30/2010	0.74	1.06	7.6	7.9	55.7	60.2	2
10/31/2010	0.30	0.51	7.7	7.9	56.5	60.0	2
11/30/2010	0.24	0.33	7.7	7.9	53.9	55.2	2
12/31/2010	0.43	0.77	7.7	7.9	50.2	57.9	2
1/31/2011	0.62	0.79	7.6	7.9	49.8	53.0	2
2/28/2011	0.80	1.05	7.6	7.7	48.9	50.0	2
3/31/2011	0.69	0.91	7.6	7.8	50.1	51.8	2
4/30/2011	0.39	0.69	7.7	8.0	54.2	57.7	2
5/31/2011	0.60	1.06	7.6	8.0	55.2	57.7	2
6/30/2011	0.90	1.12	7.6	7.8	55.2	57.4	2
7/31/2011	0.69	0.94	7.6	7.8	58.2	60.6	2
8/31/2011	0.75	0.93	7.6	7.8	57.9	60.4	2
9/30/2011	0.62	0.87	7.1	7.8	61.1	70.7	0
10/31/2011	0.38	0.60	7.4	7.7	55.6	64.5	0
11/30/2011	0.52	0.73	7.4	7.5	52.0	54.0	0
12/31/2011	0.63	0.78	7.3	7.6	50.2	51.4	0
1/31/2012	0.60	0.75	7.3	7.5	49.2	50.7	0
2/29/2012	0.59	0.66	7.3	7.7	50.3	50.9	0

ATTACHMENT C¹ (cont.)

Existing Permit's Effluent Limits	Report	1.9 mgd	6.5 SU	9.0 SU	Report	75 deg F	5.0 ug/L
Minimum	0.24	0.33	7.0	7.5	48.9	50.0	0
Maximum	1.04	1.49	7.9	8.2	61.1	70.7	29
Average	0.66	0.93	7.6	7.9	54.0	57.2	2.6
Standard Deviation	0.19	0.23	0.19	0.14	3.52	4.65	3.32
# Measurements	80	80	79	79	80	80	80
# Exceeds Limits	NA	0	0	0	0	0	4

Foot Note

1. CRREL's existing permit was originally issued with pH limits of 6.5 – 8.0 SU. CRREL, from late 2007 to mid-2007 conducted a pH demonstration study to justify the application of a less stringent pH effluent limitation. NHDES-WD on August 6, 2007 validated CRREL's pH demonstration. EPA granted a modification of CRREL's pH limit to 6.5. to 9.0 SU on September 4, 2007. Based on the original pH limit of 6.5 – 8.0 SU, though, CRREL exceeded the upper pH limit of 8.0 SU seven times during the period of May 2005 to September 2007.

ATTACHMENT D

DILUTION FACTOR

The dilution factor (also referred to as the available dilution) for aquatic life criteria in the receiving water was determined to be 273. This calculation is based on using the plant's design flow 1.9 MGD, a 7Q10 flow (i.e., the lowest average flow which occurs for 7 consecutive days on an annual basis with a recurrence interval of once in 10 years on average) for the Connecticut River in the vicinity the facility's outfall of 891 cfs, and a State of New Hampshire prescribed minimum 10% set aside or reserve. A calculated value for the 7Q10 flow was provided by the NHDES. The State has reserved 10 percent of the Assimilative Capacity of the receiving water for future uses pursuant to RSA 485-A:13, I.(a) and Env-Wq 1705.01. See the following for calculation of the dilution factor.

The dilution factor for human health criteria in the receiving water was determined to be 980. This calculation is based on using the plant's design flow 1.9 MGD, a harmonic mean flow for the Connecticut River in the vicinity the facility's outfall of 3200 cfs, and a State of New Hampshire prescribed minimum 10% set aside or reserve. A calculated value for the harmonic mean flow was provided by the NHDES. The State has reserved 10 percent of the Assimilative Capacity of the receiving water for future uses pursuant to RSA 485-A:13, I.(a) and Env-Ws 430.25. See the following for calculation of the human health criteria dilution factor.

Where:

$$DF = \frac{(0.646)(7Q10 \text{ or } Q_{H001})(0.9)}{(Q_{CRREL})}$$

DF	Dilution Factor (DF)
DF _{HMF}	Dilution Factor; Harmonic Mean Flow
0.646	Conversion Factor; cubic feet per second (cfs) to millions of gallons per day (mgd)
7Q10	Connecticut River 7Q10 at CRREL Outfall 001: 890.5 cfs
Q _{H001}	Connecticut River Harmonic Mean Flow at CRREL Outfall 001: 3200 cfs
0.9	10% of water body's assimilative capacity held in reserve. See Env-Wq 1705.01
Q _{CRREL}	CRREL Outfall 001 permitted flow; 1.9 mgd (max day)

Substituting:

$$DF = \frac{(0.646)(890.5)(0.9)}{(1.9)} = 272.7$$

$$DF_{HMF} = \frac{(0.646)(3200)(0.9)}{1.9} = 979.2$$

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

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

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

DATE OF NOTICE: **July 13, 2012**

PERMIT NUMBER: **NH0001619**

PUBLIC NOTICE NUMBER: NH-010-12

NAME AND MAILING ADDRESS OF APPLICANT:

U.S. Army Corps of Engineers (USACE)
Engineer Research and Development Center (ERDC)
3909 Halls Ferry Road
Vicksburg, Mississippi 39180

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

U.S. Army Corps of Engineers
Engineer Research and Development Center
Cold Regions Research and Engineering Laboratory (CRREL)
72 Lyme Road
Hanover, New Hampshire 03755-1290

RECEIVING WATER: Connecticut River

CLASSIFICATION: Class B

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division have cooperated in the development of a draft permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure that State Water Quality Standards and provisions of the Clean Water Act (CWA) will be met. EPA has formally requested that the State certify the draft permit pursuant to Section 401 of the CWA and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) and the draft permit may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html or by writing or calling EPA's contact person named below:

John Paul King
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1295
Fax: (617) 918-0295

The administrative record containing all documents relating to the draft permit is on file and may be inspected at EPA's Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of the draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **August 11, 2012**, to the U.S. EPA; ATTN: John Paul King, OEP06-1; 5 Post Office Square; Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider the draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION:

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

HARRY T. STEWART, P.E., DIRECTOR
WATER DIVISION
NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

STEPHEN S. PERKINS, DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
U.S. ENVIRONMENTAL PROTECTION
AGENCY - REGION I