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"),

Aquatic Research Organisms, Inc.

is authorized to discharge from the facility located at

One Lafayette Road, Building #7
Hampton, New Hampshire 03842

to receiving waters named

Taylor River (Hydrologic Unit Code: 01060003)

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

This permit will become effective on the first day of the calendar month immediately following sixty days after signature.

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

This permit supersedes the permit issued on August 14, 2006 that became effective on November 1, 2006.

This permit consists of **Part I** (9 pages including effluent limitations and monitoring requirements); **Attachment A** (Marine Acute Toxicity Test Procedure and Protocol, September 1996, 10 pages); and **Part II** (25 pages including Standard Conditions).

Signed this 19th day of June, 2012

/S/ SIGNATURE ON FILE

_____

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency (EPA)
Region I
Boston, Massachusetts

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through expiration, the permittee is authorized to discharge from outfall number 002 (culture flow through water) to the tidal Taylor 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 prior to mixing with any wastestreams authorized under NPDES permit number NH0022055.

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow; MGD	0.007	0.012	Continuous	Recorder[1]
TSS; mg/l	Report	50[2]	1/Week[2]	Grab[2]
pH Range[3]; Standard Units	6.5 to 8.0	(See I.E.1.a.)	1/Day	Grab
Fecal Coliform[3,4,5]; Colonies/100 ml	14	Report	5/Week	Grab
Enterococci[3,4,5]; Colonies/100 ml	Report	Report	2/Week	Grab
Total Residual Chlorine[6]; mg/l	0.75	1.0	2/Day (when in use)	Grab
Whole Effluent Toxicity				
LC50[7,8,9]; Percent	---	100	1/Year	24 Hour Composite
Ammonia Nitrogen as N[10]; mg/l	---	Report	1/Year	24 Hour Composite
Total Recoverable Cadmium[10]; mg/l	---	Report	1/Year	24 Hour Composite
Total Recoverable Chromium[10]; mg/l	---	Report	1/Year	24 Hour Composite
Total Recoverable Copper[10]; mg/l	---	Report	1/ Year	24 Hour Composite
Total Recoverable Lead[10]; mg/l	---	Report	1/ Year	24 Hour Composite
Total Recoverable Nickel[10]; mg/l	---	Report	1/ Year	24 Hour Composite
Total Recoverable Zinc[10]; mg/l	---	Report	1/ Year	24 Hour Composite

See pages 3 and 4 for explanation of superscripts

EXPLANATION OF SUPERSCRIPTS TO PARTS I.A.1.on page 2:

(1) The effluent flow shall be continuously measured and recorded using a flow meter and totalizer.

(2) Sampling must be conducted during a culture tank cleaning episode.

(3) State certification requirement.

(4) Fecal coliform and enterococci bacteria shall be sampled concurrently. The average monthly values for fecal coliform and enterococci bacteria shall be determined by calculating the geometric mean. Not more than 10 percent of the fecal coliform samples collected shall exceed a most probable number (MPN) of 43 colonies per 100 ml for a 5 tube decimal dilution test. All fecal coliform and enterococci bacteria data collected must be submitted with the Monthly Discharge Monitoring Reports (DMRs).

Fecal coliform monitoring does not need to be done on the six major holidays of each year: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The sampling frequency may be reduced to a minimum of 4 times per week during weeks that include one of these holidays. Enterococci monitoring must remain at a minimum of twice per week.

(5) Fecal coliform testing shall be performed using Standard Methods for the Examination of Water and Wastewater (18^{th}, 19^{th} or 20^{th} Edition), Method 9221 C E, 9221 C E-99, 9222 D or 9222 D-97, EPA Method – p. 124, or USGS Method B-0050-85. Enterococci testing shall be performed using EPA Method 1600, ASTM Method D6503-99 or the IDEXX Enterolert Method.

(6) When chlorine is in use, total residual chlorine (TRC) shall be tested in outfall 002 using the low level Amperometric titration or the DPD spectrophotometric method. These methods are found in Standard Methods for the Examination of Water and Wastewater (18^{th}, 19^{th} or 20^{th} Edition), Method 4500-Cl E and Method 4500-Cl G. The minimum level (ML) for total residual chlorine is defined as 20 ug/l. Sample results of 20 ug/l or less shall be reported as zero on the DMRs. Monitoring for fecal coliform and enterococci bacteria as described in footnotes (4) and (5) above shall be conducted concurrently with the monitoring for TRC, when chlorine is in use.

(7) "LC50" is defined as the concentration of wastewater that causes mortality to 50 percent of the test organisms. The permit limit of 100 percent is defined as a sample composed of 100 percent effluent. This limit is a maximum daily limit.

(8) The permittee shall conduct 48-hour acute toxicity tests using mysid shrimp (Mysidopsis bahia) and inland silverside (Menidia beryllina) (See Attachment A). This testing shall be performed in the third quarter (July, August, September) of each year and results should be submitted by October 15^{th}.

(9) This permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits, 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 40 C.F.R §122.62(a)(2).

(10) For each toxicity test, the permittee shall report on the appropriate DMR the concentrations of ammonia-N as N and these six (6) metals (cadmium, chromium, copper, lead, nickel, and zinc) found in the 100 percent effluent sample. Also, the permittee should note that all metals results must still be reported with the appropriate toxicity test report.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

2. The permittee shall notify EPA and the State within 24-hours upon the occurrence of a water quality induced mortality of greater than 25 percent in any aquatic species under culture at the facility in accordance with reporting requirements in Part II.D.1.e. This requirement applies only to cultures directly connected to the discharge.

3. The discharges shall not cause a violation of the water quality standards of the receiving water.

4. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.

5. The discharges shall be adequately treated if necessary to ensure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits or float as foam, oil & grease, debris, scum or other visible pollutants. Any necessary treatment shall ensure that the surface waters remain free from pollutants which produce odor, color, taste or turbidity in the receiving water which is not naturally occurring and would render it unsuitable for its designated uses.

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

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

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

        (2) Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol; and 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) and New Hampshire regulations.

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) and New Hampshire regulations.

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.

7. The permittee must notify EPA-New England and the NHDES-WD when there is a “reportable failure” in (as defined immediately below), or damage to, the structure of an aquatic animal containment system (i.e. culture unit) or its wastewater treatment system that results in an unanticipated material discharge of pollutants to waters of the United States.

A reportable failure applies to any active culture units and ancillary components (pipes, valves, plumbing fixtures or physical barriers that prevent water, sediment or settled solids from spilling).

8. In the event of a spill of drugs, feed or other products that results in a discharge to water of the United States, the permittee must provide an oral report of the spill to EPA-New England and the NHDES-WD within 24 hours of its occurrence and a written report within 5 days to the above Agencies. The report shall contain the identity and quantity of the material spilled.

9. 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 any 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. RESIDUALS

The permittee shall comply with all existing federal, state and local laws and regulations that apply to the reuse or disposal of industrial residuals such as those found in the culture tanks. These include but are not necessarily limited to 40 CFR Section 257 and Env-Ws 800.

C. MONITORING AND REPORTING CONDITIONS

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 permittees to electronically submit Discharge Monitoring Reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit,** the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

   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.

   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:

      Attn: NetDMR Coordinator
      U.S. Environmental Protection Agency, Water Technical Unit
      5 Post Office Square, Suite 100 (OES04-4)
      Boston, MA 02109-3912

And

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

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

D. SPECIAL CONDITIONS

1. Effluent diffusers shall be maintained when necessary to ensure proper operation. Proper operation means that the plumes from each port will be balanced relative to each other and that they all have unobstructed flow. Maintenance may include dredging in the vicinity of the diffuser, clean out of solids in the diffuser header pipe, removal of debris and repair/replacement of riser ports and pinch valves.

2. Any necessary maintenance dredging must be performed only during the marine construction season authorized by the New Hampshire Fish & Game Department and only after receiving all necessary permits from the NHDES Wetlands Bureau, U.S. Coast Guard, U.S. Army Corps of Engineers, etc.

3. To determine if maintenance will be required the permittee shall have a licensed diver or licensed marine contractor inspect and videotape the operation of the diffuser. In order to aid the videotaping of the outfall and to be able to identify effluent coming out of the diffuser, Rhodamine WT dye or similar product shall be added to the effluent during the dive inspection. The inspections and videotaping shall be performed in accordance with the following schedule.

    a. Every year if no pinch valves have been installed on the riser ports; or
    b. Every two years if pinch valves have been installed on the riser ports.

    EPA and the NHDES-WD shall be contacted at least seven (7) days prior to the dive inspection.

4. Copies of a report summarizing the results of each diffuser inspection shall be submitted to EPA and NHDES WD within 60 days of each inspection. Where it is determined that maintenance will be necessary, the permittee shall provide the proposed schedule for the maintenance.

E. STATE PERMIT CONDITIONS

1. The permittee shall comply with the following conditions which are included as State Certification requirements.

    a. The pH range of 6.5-8.0 standard units (S.U.) must be achieved in the final effluent unless the permittee can demonstrate to NHDES: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring source water pH is unaltered by the permittee's operations. The scope of any demonstration project must receive prior approval from NHDES. In no case, shall the above procedure result in pH limits less restrictive than any applicable federal categorical effluent limitation guidelines regulations.

    b. Aquatic Research Organisms is responsible for immediately notifying the New Hampshire Department of Environmental Services, Watershed Management Bureau, Shellfish Section of possible high bacteria/virus loading events from its facility. Such events include:

        i. Any lapse or interruption of normal operation of the facility's effluent disinfection system, or other event that results in discharge of effluent that has not undergone full treatment as specified in the NPDES permit; or

        ii. Daily flows in excess of the facility's maximum daily flow of 0.012 MGD; or

        iii. Daily post-disinfection effluent sample results of greater than 43 fecal coliform cts/100ml. Notification shall also be made for instances where NPDES-required bacteria sampling is not completed, or where the results of such sampling are invalid.

        Notification to the NHDES Shellfish Program shall be made using the program's 24-hour pager. Upon initial notification of a possible high bacteria/virus loading event, NHDES Shellfish Program staff will determine the most suitable interval for continued notification

and updates on an event-by-event basis.

2. This NPDES Discharge Permit is issued by the U.S. Environmental Protection Agency under Federal and State law. Upon final issuance by the EPA, the NHDES 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.

MARINE ACUTE
TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

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

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

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

II. METHODS

Methods to follow are those recommended by EPA in:

Weber, C.I. et al. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. August 1993, EPA/600/4-90/027F.

Any exceptions are stated herein.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for the chemical and physical analyses. The remaining sample shall be dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual oxidants (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium

thiosulfate to reduce 1.0 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected at a point away from the discharge which is free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a conductivity, salinity, total suspended solids, and pH similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternative dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

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

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

1.	Test type	Static, non-renewal
2.	Salinity	25ppt ± 10 percent for all dilutions by adding dry ocean salts
3.	Temperature (°C)	
	20°C ± 1°C or 25°C ± 1°C	
4.	Light quality	
	Ambient laboratory illumination	
5.	Photoperiod	
	16 hour light, 8 hour dark	
6.	Test chamber size	250 ml
7.	Test solution volume	200 ml
8.	Age of test organisms	1-5 days
9.	No. Mysids per test chamber	10
10.	No. of replicate test chambers per treatment	4
11.	Total no. Mysids per test concentration	40
12.	Feeding regime	Light feeding using concentrated Artemia nauplii while holding prior to initiating the test
13.	Aeration[2]	None

14.	Dilution water	Natural seawater, or deionized water mixed with artificial sea salts
15.	Dilution factor	$\geq$ 0.5
16.	Number of dilutions[3]	5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
17.	Effect measured	Mortality - no movement of body appendages on gentle prodding
18.	Test acceptability	90% or greater survival of test organisms in control solution
19.	Sampling requirements	For on-site tests, samples are used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
20.	Sample volume required	Minimum 1 liter for effluents and 2 liters for receiving waters

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Footnotes:

1. Adapted from EPA/600/4-90/027F.

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

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

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

1.	Test Type	Static, non-renewal
2.	Salinity	25 ppt ± 2 ppt by adding dry ocean salts
3.	Temperature	20°C ± 1°C or 25°C ± 1°C
4.	Light Quality	Ambient laboratory illumination
5.	Photoperiod	16 hr light, 8 hr dark
6.	Size of test vessel	250 mL (minimum)
7.	Volume of test solution	200 mL/replicate (minimum)
8.	Age of fish	9-14 days; 24 hr age range
9.	No. fish per chamber	10 (not to exceed loading limits)
10.	No. of replicate test vessels per treatment	4
11.	total no. organisms per concentration	40
12.	Feeding regime	Light feeding using concentrated Artemia nauplii while holding prior to initiating the test
13.	Aeration[2]	None
14.	Dilution water	Natural seawater, or deionized water mixed with artificial sea salts.
15.	Dilution factor	≥ 0.5

16. Number of dilutions[3]	5 plus a control. An additional dilution at the permitted concentration (% effluent) is required if it is not included in the dilution series.
17. Effect measured	Mortality-no movement on gentle prodding.
18. Test acceptability	90% or greater survival of test organisms in control solution.
19. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time they are removed from the sampling device. Off-site test samples must be used within 36 hours of collection.
20. Sample volume required	Minimum 1 liter for effluents and 2 liters for receiving waters.

Footnotes:

1. Adapted from EPA/600/4-90/027F.

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

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

VI. CHEMICAL ANALYSIS

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

Parameter	Effluent	Diluent	Minimum Quantification Level (mg/L)
pH	x	x	---
Salinity	x	x	PPT(o/oo)
Total Residual Oxidants[*1]	x	x	0.05
Total Solids and Suspended Solids	x	x	---
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x		0.001
Cr	x		0.005
Pb	x		0.005
Cu	x		0.0025
Zn	x		0.0025
Ni	x		0.004
Al	x		0.02

Superscript:

[*1] Total Residual Oxidants

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

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

or use USEPA Manual of Methods Analysis of Water or Wastes, Method 330.5.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration

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

Methods of Estimation:

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

See flow chart in Figure 6 on page 77 of EPA 600/4-90/027F for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See flow chart in Figure 13 on page 94 of EPA 600/4-90/027F.

VIII. TOXICITY TEST REPORTING

The following must be reported:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicity test data must be included.
- Raw data and bench sheets.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Provide a description of dechlorination procedures (as applicable).

- Any other observations or test conditions affecting test outcome.

- Statistical tests used to calculate endpoints.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

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

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

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

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

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

2. Permit Actions

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

3. Duty to Provide Information

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

4. Reopener Clause

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

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

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

5. Oil and Hazardous Substance Liability

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

6. Property Rights

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

7. Confidentiality of Information

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

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

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

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

8. Duty to Reapply

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

9. State Authorities

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

10. Other Laws

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

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. Bypass not exceeding limitations

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

c. Notice

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

d. Prohibition of bypass

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

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

5. Upset

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

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

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

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

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

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

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

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

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

c. Records of monitoring information shall include:

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

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

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

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

2. Inspection and Entry

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

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

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

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

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

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

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

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

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

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

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

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

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

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

e. Twenty-four hour reporting.

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

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

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

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

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

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

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

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

2. Signatory Requirement

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

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

3. Availability of Reports.

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

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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

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

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

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

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

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

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

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

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

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

Construction Activities - The following definitions apply to construction activities:

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

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

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

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

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

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

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

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

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

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

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

Discharge of a pollutant means:

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

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

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

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

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

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

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

EPA means the United States "Environmental Protection Agency".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NPDES means "National Pollutant Discharge Elimination System".

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

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

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

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

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

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

(a) Sewage from vessels; or

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Waters of the United States means:

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

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

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

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

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

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

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

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

(f) The territorial sea; and

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Range land is open land with indigenous vegetation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. Commonly Used Abbreviations

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

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

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
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FACT SHEET

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

PUBLIC NOTICE START AND END DATES:

PUBLIC NOTICE NUMBER: NH-007-12

CONTENTS: 16 pages including Attachments A through C

NPDES PERMIT NO.: NH0022985

NAME AND ADDRESS OF APPLICANT:

Aquatic Research Organisms, Inc.
P.O. Box 1271
Hampton, New Hampshire 03843-1271

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Aquatic Research Organisms, Inc.
One Lafayette Road, Building #7
Hampton, New Hampshire 03843

RECEIVING WATERS:

Taylor River - Channel (Hydrologic Unit Code: 01060003)

CLASSIFICATION: B

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

Aquatic Research Organisms, Inc. (ARO) cultures marine and freshwater aquatic invertebrate species and fish used in environmental and biological testing. The discharge to the Taylor River is through an outfall diffuser. The discharge (approximate average flow of 6,000 gallons per day) to the Taylor River consists of culture cooling water and culture water from the saltwater/groundwater intake. The culture water consists of flow through water, water from cleaning the culture systems, and water spilled while collecting the various species for shipment.

A private well serves as the source of fresh water and the Taylor River as the salt water. ARO first filters the intake waters and then disinfects using ultraviolet light (UV) prior to pumping to storage tanks and subsequent use in the culture systems. Filtering for freshwater consists of a sand filter, and ion exchange unit, and an activated carbon filter. Filtering of salt water consists of a high volume sand filter and an activated carbon filter. The combined salt and fresh water flows through this facility are disinfected using UV prior to discharge.

The previous permit was issued on August 14, 2006, became effective on November 1, 2006, and expired on October 31, 2011. The expired permit (hereafter referred to as the "2006 permit") has been administratively extended as the applicant filed a complete application for permit reissuance as per 40 Code of Federal Regulations (CFR) §122.6. The 2006 permit authorizes discharge from Outfall 002. Outfall 002 is shared with EnviroSystems, Inc. (ESI) located adjacent to ARO; though the outfall is shared, each facility has a separate NPDES permit.

The location of the facility, Outfall 002 and the receiving water are shown in Attachment A.

II. Description of Discharge.

A quantitative description of significant effluent parameters based on discharge monitoring data (November 2006 through October 2011) is shown in Attachment B.

III. Limitations and Conditions.

This draft permit contains limitations for flow, total suspended solids, pH, fecal coliform, and total residual chlorine (when in use). In addition, a "report only" requirement for enterococci bacteria is included. The effluent limitations and monitoring requirements are found in Part I of the draft NPDES permit. The basis for each limit and condition is discussed in section IV of this fact sheet.

IV. Permit Basis and Explanation of Effluent Limitations Derivation

A. Background

The Clean Water Act (Act) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the Act. The NPDES permit is the mechanism used to implement technology and water-quality based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and

regulatory requirements established pursuant to the Act and any applicable State administrative rules. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136. Many of these regulations consist primarily of management requirements common to all permits.

EPA is required to consider technology and water quality-based requirements as well as all requirements/limitations in the 2006 permit when developing permit limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the Act (See 40 CFR §125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT) for conventional pollutants and some metals, Best Conventional Pollution Control Technology (BCT) for conventional pollutants, and Best Available Technology Economically Achievable (BAT) for non-conventional and toxic pollutants. Technology guidelines (effluent limitations) for various industrial categories are found in 40 CFR §400-471, Subchapter N, Effluent Guidelines and Standards.

In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1)(B) of the Act to establish effluent limitations on a case-by-case basis using Best Professional Judgement (BPJ).

In general, all statutory deadlines for meeting various technology-based guidelines (effluent limitations) established pursuant to the Act have expired. For instance, compliance with publicly owned treatment works (POTW) technology-based effluent limitations is, effectively, from date of permit issuance (40 CFR §125.3(a)(1)). Those for non-POTW technology-based effluent limitations must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989 (40 CFR §125.3(a)(2)). Compliance schedules and deadlines not in accordance with the statutory provisions of the Act cannot be authorized by a NPDES permit.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water-quality standards. 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.

The proposed draft permit attempts to 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. An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion outside of a mixing zone.

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permittee's reissuance application, Monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the species to toxicity

testing; (4) known water-quality impacts of processes on wastewaters; (5) statistical approach outlined in **Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-002** in Section 3; and, where appropriate, (6) dilution of the effluent in the receiving water. In accordance with State statutes and administrative rules [50 RSA 485-A:8, and Env-Wq 1705.02], available dilution for discharges to freshwater receiving waters is based on an estimated value of the 7 consecutive-day mean low flow at the 10-year recurrence interval (7Q10) for aquatic life or the mean annual flow for human health (carcinogens only) in the receiving water at the point of discharge. For discharges to marine/estuarine waters the available dilution is determined using hydrodynamic mixing zone modeling.

The draft permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those conditions in the previous permit unless in compliance with the anti-backsliding requirement of the Act [See Sections 402(o) and 303(d)(4) of the Act and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provisions prohibit the relaxation of permit limits, standards, and conditions unless certain conditions are met. Therefore, unless those conditions are met the limits in the reissued permit must be at least as stringent as those in the previous permit.

In addition, the draft permit must conform to the conditions established pursuant to a State Certification under Section 401 of the Act that meet the requirements of 40 CFR §124.53 and §124.55. EPA regulations pertaining to permit limits based upon water-quality standards and state requirements are contained in 40 CFR §122.44(d).

The conditions of the draft permit reflect the goal of the Act and EPA to achieve and then to maintain water quality standards. To protect the existing quality of the State's receiving waters, the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) adopted Antidegradation requirements (Env-Ws 1708) in their NH Standards.

ARO is not considered a concentrated aquatic animal production facility according to the definition given in 40 CFR 122.24 because they are believed to be well under the threshold for fish production. However, EPA believes that this permit is sufficient to limit any pollutants of concern related to fish production. No national effluent limitation guidelines have been promulgated that cover a discharge of this type.

B. Flow and Conventional Pollutants

Flow

The current flow limits on this discharge are 10,000 gpd for Average Monthly and 15,000 gpd for Maximum Daily. These values were established using information provided by the applicant in 1997. These flow limits were established to represent the current and future operations at this facility. However, based upon information provided by the applicant in May 2011, the actual flow is much lower than these limits. Hence, the flow limits are being decreased to 7,000 gpd for Average Monthly and 12,000 gpd for Maximum Daily. Flow limits are necessary since water quality based permit limits are based on the assumption that the discharge will have a certain flow. Flow must be measured with a flow meter and recorded continuously.

ARO and ESI historically were two divisions under Millipore of New Hampshire. After Millipore's sale of the divisions, ARO and ESI were established as individual companies and

EPA-New England issued permits NH0022055 to ESI and NH0022985 to ARO. These permits reflect each applicant's discharge, even though these two facilities share a common outfall pipe (002). Although the flow limit in this permit reissuance for ARO is decreasing from 10,000 gpd to 7,000 gpd, the maximum allowable monthly average flow from ESI is increasing from 4,000 gpd to 7,000 gpd. Hence, the total maximum allowable monthly average flow from Outfall 002 (14,000 gpd) and the available dilution for these facilities remain the same as in the 2006 permit (see section on "Available Dilution" below).

Total Suspended Solids (TSS)

The 2006 permit includes a maximum daily TSS limit of 50 mg/l and requires weekly monitoring. Over the period of November 2006 - October 2011, TSS concentrations have ranged from 0 mg/l to 56 mg/l with an average of 13.36 mg/l (see Attachment C). Weekly monitoring and a maximum daily limit of a 50 mg/l have been retained in the draft permit. This maximum daily limit is intended to protect the Taylor River from TSS concentrations that could form objectionable benthic deposits in the vicinity of the discharge. TSS concentrations are expected to be at their highest during the cleaning of the culture tanks; therefore, a grab sample taken during cleaning activity is required. TSS and all other samples must be collected by ARO at a location prior to mixing with the discharge from ESI.

Bacteria

New Hampshire State statute N.H. RSA 485-A:8,V. specifies that the bacteria standard shall be "…as recommended under the National Shellfish Program Manual of Operation, United States Department of Food and Drug Administration." This standard applies to facilities which discharge into tidal waters used for growing or taking of shellfish for human consumption, and therefore applies to ARO. The recommended criteria for fecal coliform bacteria is 14 colonies per 100 milliliters and includes a condition that "…not more that 10 percent of the collected samples to exceed a Most Probable Number (MPN) of 43 per 100 milliliters for a 5-tube decimal dilution test."

N.H. RSA 485-A:8,V. also requires enterococci bacteria limits for discharges to "tidal waters utilized for swimming purposes." The recommended criteria for enterococci bacteria is that the water should contain "… not more than either a geometric mean based on at least 3 samples obtained over a 60-day period of 35 colonies per 100 milliliters in any one sample unless naturally occurring."

The draft permit includes compliance monitoring frequency for fecal coliform five times per week (5/week), and two times per week (2/week) for enterococci bacteria. These monitoring frequencies are the same as the 2006 permit.

The draft permit also contains a state permit condition to notify the New Hampshire Department of Environmental Services, Watershed Management Bureau, Shellfish Section whenever there is an upset or bypass of the disinfection system.

pH

NHDES requires that pH limits be satisfied at end-of-pipe with no allowance for dilution. The limit for pH is based upon State Certification Requirements and RSA 485-A:8.I. which requires that Class B waters maintain a pH range of 6.5 to 8.0, except when due to natural causes. The

draft permit limits for pH are the same as the limits in the existing permit. If the applicant can demonstrate (see Part I.E.1.a. of the draft permit) to the satisfaction of NHDES that the in-stream standard will be protected when the discharge is outside of the permitted range, then they or NHDES-WD may request (in writing) that the permit limits be modified by EPA to incorporate the results of the demonstration. EPA will notify the permittee and the NHDES-WD if it concurs with the results.

The compliance monitoring frequency for pH is daily, the same as in the 2006 permit. This frequency conforms to the latest version of **EPA/NHDES-WD's Effluent Monitoring Guidance (EMG)** mutually agreed upon and first implemented in March 1993 and last revised on July 19, 1999. The analytical method for pH requires that the sample type be a grab.

C. Available Dilution and Nonconventional and Toxic Pollutants

Water quality-based limits for specific pollutants such as chlorine or metals are determined from chemical specific numeric criteria derived from extensive scientific studies. The specific toxic pollutants and their associated toxicity criteria are known as the "Gold Book Criteria" which EPA published in **Quality Criteria for Water, 1986, (EPA 440/5-86-001 as amended**). The State of New Hampshire adopted these "Gold Book Criteria" with certain exceptions, and included them as part of the NH Standards. EPA uses these pollutant specific criteria and available dilution in the receiving water to determine a specific pollutant's draft permit limit.

Available Dilution

Available dilution in the receiving water for outfall 002, as discussed in the 2006 permit, was determined to be:

- 97.9 (maximum daily flow); and
- 100 (monthly average flow).

Outfall 002 is a multiport diffuser located on the river bottom near the middle of the tidal Taylor River. The diffuser was designed using the Cornell Mixing Zone Expert System (CORMIX), to account for re-entrainment of a previously discharged plume such as that which occurs in tidally reversing rivers.

The worst case acute and chronic dilutions predicted by CORMIX occurred 15 minutes after the spring low tide. The multiport diffuser outfall supports both ARO and the discharge permitted under NPDES permit number NH0022055 (ESI). A flow of 14,000 gallons/day, the combined maximum allowable monthly average flow from ARO and ESI, was used for the modeling and remains the combined allowable flow in the current reissuance of these permits. Based on this, the chronic (monthly average) dilution factor will remain the same as above. The maximum allowable daily flow from the two facilities is also maintained at a total of 19,000 gallons/day. Based on this, the acute (maximum daily) dilution factor will also remain the same as above. However, there are not any maximum daily water quality-based limits in the draft permit.

Outfall diffusers are mechanical structures that will require periodic maintenance. If they are not working as designed, the available dilution upon which permit limitations are based may not be achieved. Further, the reasonable potential calculations that are used to determine if a permit limit is necessary may be in error. Either of these situations could lead to violations of the NH standards. Accordingly, NHDES and EPA-New England have included a permit condition that requires periodic inspections and any necessary maintenance of the diffuser pursuant to 40 CFR 122.41(3), "*Proper operation and maintenance*".

Total Residual Chlorine

ARO uses an ultraviolet (UV) disinfection system for all of its process water and effluent. In the event of a malfunction of the UV unit, ARO may use chlorine as an alternative disinfection method. Therefore, total residual chlorine (TRC) is limited in outfall 002. Since it is not normally used, however, the draft permit requires monitoring twice daily only when chlorine is being used. This frequency is consistent with the EPA/NHDES Effluent Monitoring Guidance described above. The monthly average numeric limitation included in the draft permit was derived using the monthly average dilution factor of 100 and the chronic marine water quality standard for chlorine. The maximum daily limitation of 1.0 is the same as in the existing permit and was derived using Best Professional Judgment (BPJ) under the authority granted in Section 402(a)(1) of the Act and 40 CFR 125.3. This is consistent with antibacksliding regulations.

Formaldehyde

ARO uses a Formalin product (such as Paracide-F, Formalin-F or Parasite-S) which contains approximately 37% by weight formaldehyde gas. The formalin product is used for the therapeutic treatment of fungal infections on the eggs of finfish and to control certain external protozoa and monogenetic trematodes of all finfish species. This means that Formalin is more toxic to the invertebrate species than to vertebrates, for it is formulated to selectively kill certain attached organisms, but not the finfish themselves when properly applied. Therefore, when setting the necessary permit limits to protect the receiving water's aquatic environment from the effects of Formalin in a discharge, it is more important to develop limits to protect invertebrates species over the vertebrates species, for the former are more sensitive to the effects of Formalin's active ingredient (formaldehyde).

Formalin use should be consistent with U.S. Food and Drug Administration (FDA) labeling instructions as per 21 CFR Section 529.1030. Existing toxicity data indicates that formalin is toxic to aquatic organisms at concentrations below FDA labeling guidelines. Currently there are no acute and chronic aquatic life criteria for either Formalin or formaldehyde in the NH Standards. However, New Hampshire law states that, "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that inure or are inimical to plants, animals, humans, or aquatic life;…" (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1703.21(a)(1)). Therefore, in the absence of specific Formalin or formaldehyde aquatic life and chronic criteria in the NH Standards, EPA-New England has decided to impose formaldehyde limits in the draft permit based on acute and chronic aquatic life criteria taken from the Derivation of Ambient Water Quality Criteria for Formaldehyde (Hohreiter, D.W. and Rigg, D.K., *Journal of Science for Environmental Technology in Chemosphere*, Vol. 45, Issues 4-5, November 2001, pgs 471-486). EPA-New England believes that since these criteria were developed in accordance with the United States Environmental Protection Agency's (U.S. EPA's) ***Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic***

Organisms and Their Uses they are appropriate for use in limit setting purposes. From that publication, the acute (maximum daily) and chronic (average monthly) aquatic-life criteria for formaldehyde are 4.58 and 1.61 mg/l, respectively. Because available dilution in the Taylor River is 97.9 and 100 for the acute and chronic aquatic-life criteria respectively, the limits in the draft permit would be 448 mg/L and 161 mg/L respectively.

The permittee sampled its effluent quarterly for formaldehyde between January 2007 and March 2009. Of these 9 samples, only 2 detected formaldehyde with a maximum value of 0.37 mg/l. Because these results are well below both acute and chronic formaldehyde criteria, there is no reasonable potential that this discharge would cause or contribute to an exceedence of the criteria; hence, no limit or monitoring requirement has been included in the draft permit.

D. Whole Effluent Toxicity

EPA's recently published **Technical Support Document for Water Quality-based Toxics Control**, **EPA/505/2-90-001, March 1991**, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, whole effluent toxicity (WET) approaches evaluate interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "Additivity" and/or "Antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the Act specifically prohibits the discharge of toxic pollutants in toxic amounts and State law N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1700 states that, "all classes of waters shall be free from toxic pollutants or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;". NPDES regulations under 40 CFR §122.44(d)(1)(v) require WET 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.

In the 2006 permit, EPA-New England believed there was "reasonable potential" to cause an excursion of the no toxics provision in the State's regulations based on data from the permit application and the fact that the discharge contained several toxic pollutants.

The 1998 permit was conditioned for ARO to conduct a one-time pass/fail toxicity test, and if the pass/fail test was unsuccessful, quarterly acute toxicity testing was required. As a special condition of the 1998 permit, the frequency of testing could be reduced by a certified letter from EPA-New England upon written request by the permittee. Accordingly, the 1998 permit was modified in March 2001 to reduce toxicity testing to one time per year. The requirement for once per year toxicity testing has been carried forward to the current draft permit.

An analysis of the facilities WET reports shows consistent compliance with the LC50 limit of 100%. From 2007 to 2011, each annual test (5 total) was reported as 100% (See Attachment B).

E. Essential Fish Habitat and Endangered Species

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104267), established a new requirement to describe and identify (designate) "essential fish habitat" (EFH) in each federal fishery management plan. Only species managed under a federal fishery management plan are covered. Fishery Management Councils determine which areas will be designated as EFH. The Councils have prepared written descriptions and maps of EFH, and include them in fishery management plans or their amendments. EFH designations for New England were approved by the Secretary of Commerce on March 3, 1999.

The 1996 Sustainable Fisheries Act broadly defined essential fish habitat as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment, hard bottom, and structures underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact which reduces the quality and/or quantity of EFH. Adverse effects may include direct (i.e. contamination, physical disruption), indirect (i.e. loss of prey), site specific or habitat wide impacts including individual, cumulative, or synergistic consequences of actions.

According to the Guide to Essential Fish Habitat Designations in the Northeastern United States; Volume 1: Maine and New Hampshire (March 1999), EFH has been designated for the following species associated with the Taylor River.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (*Gadus morhua*)	X	X	X	X
haddock (*Melanogrammus aeglefinus*)			X	
pollack (*Pollachius virens*)			X	
whiting (*Merluccius bilnearis*)	X	X	X	X
red hake (*Urophycis chuss*)	X	X	X	X
redfish (*Sebastes fasciatus*)	n/a	X	X	X
winter flounder (*Pleuronectes americanus*)	X	X	X	X
yellowtail flounder (*Pleuronectes ferruginea*)			X	X
windowpane flounder (*Scopthalmus aquosus*)			X	X

American plaice (*Hippoglossoides platessoides*)			X	X
ocean pout (*Macrozoarces americanus*)	X	X	X	X
Atlantic halibut (*Hippoglossus hippoglussus*)	X	X	X	X
Atlantic sea scallop (*Placopecten magellanicus*)	X	X	X	X
Atlantic sea herring (*Clupea harengus*)			X	X
monkfish (*Lophius americanus*)	X	X	X	X
long finned squid (*Loligo pealei*)	n/a	n/a	X	X
short finned squid (*Illex illecebrosus*)	n/a	n/a	X	X
Atlantic butterfish (*Peprilus triacanthus*)	X	X	X	X
Atlantic mackeral (*Scomber scombrus*)	X	X	X	X
summer flounder (Paralicthys dentatus)				X
scup ((*Stenotomus chrysops*)	n/a	n/a	X	X
black sea bass (*Centropristus striata*)	n/a			
surf clam (*Spisula solidissima*)	n/a	n/a	X	X
ocean quahog (*Artica islandica*)	n/a	n/a		
spiny dogfish (*Squalus acanthias*)	n/a	n/a		
bluefin tuna (*Thunnus thynnus*)				X

The notation "n/a" indictes some of the species either have not data available on the designated lifestages, or those lifestages are not present in the species' reproductive cycle.

The conditions, limitations, and monitoring requirements contained in this draft permit are designed to be protective of all aquatic species in the Taylor River. Accordingly, it is EPA's opinion that adverse impacts to EFH for the species listed above have been minimized to the extent that they are negligible and that no additional mitigation is warranted. If adverse affects to EFH do occur as a result of this permit action, or if new information changes the basis for this conclusion, then NMFS will be notified and consultation will be reinitiated.

Endangered Species

The Endangered Species Act (16 U.S.C. 1451 et seq.), Section 7, requires the EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and/or NOAA Fisheries, as appropriate, that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species, or adversely affect its critical habitat.

NOAA Fisheries was contacted to determine whether or not endangered or threatened species are present in the Taylor River. Ms. Christine Vaccaro (NOAA Fisheries Biologist, contacted 2/29/2012) stated that there was a low probability that transiting species, such as shortnose sturgeon, Atlantic sturgeon or sea turtles, would be present in the vicinity of the discharge. However, should

there be any incidental contact of the highly diluted discharge with these species in the Taylor River, EPA believes that this draft permit would preclude any adverse effects for the following reasons.

- The permit prohibits the discharge to cause a violation of State water quality standards.
- The discharge has a high dilution factor (100:1).
- The permit contains water quality-based limits for total residual chlorine.
- The permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts.
- The permit requires toxicity testing once per year to ensure that the discharge does not present toxicity problems.

EPA believes the proposed limits are sufficiently stringent to assure that water quality standards will be met and to ensure protection of aquatic life and maintenance of the receiving water as an aquatic habitat. The Region finds that adoption of the proposed permit is unlikely to adversely affect any threatened or endangered species or its critical habitat. If adverse effects do occur as a result of this permit action, or if new information becomes available that changes the basis for this conclusion, then EPA will notify and initiate consultation with the USFWS and/or NOAA Fisheries, as appropriate.

F. Additional Requirements and Conditions

The effluent monitoring requirements in the draft permit have been established to yield data representative of the discharge under the authority of Section 308(a) of the Act 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.

V. Antidegradation

This draft permit is being reissued with an allowable wasteload identical to the 2006 permit. The parameter coverage has changed slightly to remove the formaldehyde monitoring requirement. Since the State of New Hampshire has indicated there will no lowering of water quality and no loss of existing uses, no additional antidegradation review is warranted.

VI. 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 contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards or waives its right to certify as set forth in 40 CFR §124.53. The only exception to this is that sludge conditions/requirements are not part of the Section 401 State Certification. The staff of the New Hampshire Department of Environmental Services, Water Division (certifying authority), has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State and expects that the draft permit will be certified. Regulations governing state certification are set forth

in 40 CFR §124.53 and §124.55.

VII. 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: **Mr. Michael Cobb, U.S. Environmental Protection Agency, Region 1 (New England), 5 Post Office Square - Suite 100, Mail Code OEP06-1, 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-New England and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA-New England's Boston office.

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

VIII. EPA Contact

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m. (8:00 a.m. and 4:00 p.m. for the state), Monday through Friday, excluding holidays from:

Mr. Michael Cobb, Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square
Suite 100, Mail Code: OEP06-1
Boston, Massachusetts 02109-3912
Telephone No.: (617) 918-1369
FAX No.: (617) 918-0369

4/2/2012

Date:

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

ATTACHMENT A

OUTFALL LOCATION MAP

Photo taken 4/11/98 and obtained through www.terraserver.microsoft.com.

ATTACHMENT B

CONCENTRATIONS OF EFFLUENT CHARACTERISTICS AT OUTFALL 002

The following effluent characteristics were derived from analysis of discharge-monitoring data collected from Outfall 002 during the period from November 2006 through October 2011. All these data were extracted from the monthly Discharge Monitoring Reports submitted by Aquatic Research Organisms, Inc. These effluent values characterize culture flow through effluent discharged from this facility.

Effluent Characteristic	Average of Average Monthly	Range of Average Monthly	Range of Maximum Daily
Flow (MGD)	0.0023	0.0015 - 0.0035	0.003 - 0.008
TSS (mg/l)	13.36	0 - 56	0 - 120
pH (S.U.)	-----	-----	6.76 – 8.0
Total Residual Chlorine (mg/L)	None used	None used	None used
Fecal Coliform (#/100 mL)	0.425	0.03 - 2.34	1 – 2352
Enterococci (#/100 mL)	0.68	0 – 6.02	0 - 189
Formaldehyde (mg/L)	-----	-----	0 - 0.37

Whole Effluent Toxicity (LC50 in % Effluent) (Acute)	
Species	**Range of LC50**
Americamysis bahia	100% - 100%
Menidia beryllina	100% - 100%

Metals Data Summary from Annual WET Testing (3rd quarter of each year, 2007-2011)					
	Cadmium	**Copper**	**Lead**	**Nickel**	**Zinc**
	DAILY MX	**DAILY MX**	**DAILY MX**	**DAILY MX**	**DAILY MX**
	mg/L	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Maximum	0.	0.038	0.001	0.007	0.051
Average	0.	0.016	0.0004	0.002	0.028

ATTACHMENT C

CALCULATIONS OF MASS-BASED LIMITS

Equation used to calculate monthly average and maximum daily Total Residual Chlorine limit:

Chlorine Limit = Dilution Factor x water quality standard

where:

Marine water quality standards for chlorine are

- 0.0075 mg/l (Chronic)
- 0.013 mg/L (Acute)

Dilution factors are 97.9 for Acute and 100 for Chronic.

RESPONSE TO COMMENTS – MAY 9, 2012
REISSUANCE OF NPDES PERMIT NO. NH0022985
AQUATIC RESEACH ORGANISMS, INC.
HAMPTON, NEW HAMPSHIRE

From April 5, 2012 through May 5, 2012 the U.S. Environmental Protection Agency (EPA-New England) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) solicited public comments on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to Aquatic Research Organisms, Inc. (ARO).

EPA-New England and NHDES-WD received comments from ARO (dated May 4, 2012). Below is a list of the comments received and EPA-New England's responses to those comments, including any corrections made to the public-noticed permit as a result of those comments.[1]

A copy of the final permit may be obtained by writing or calling Michael Cobb, United States Environmental Protection Agency, 5 Post Office Square, Suite 100 (Mail Code: OEP06-1), Boston, Massachusetts 02109-3912; Telephone (617) 918-1369. Copies may also be obtained from the EPA Region 1 web site at http://www.epa.gov/region1/npdes/index.html.

COMMENTS FROM AQUATIC RESEARCH ORGANISMS, INC.

COMMENT 1:

"The correct zip code for the physical location of the permittee is 03842. The address should read:

Aquatic Research Organisms Inc
One Lafayette Road
Building 7
Hampton NH 03842

The mailing address using zip code 03843-1271 is correct as listed."

RESPONSE 1:

The zip code has been corrected in the final permit.

COMMENT 2:

"ARO requests that bacterial testing requirements for fecal coliform and enterococci be suspended for the 6 annual major National Holidays: New Years Day, Memorial Day,

[1] After EPA issues a final NPDES permit for a New Hampshire point source, the State interprets its water pollution control statute to authorize subsequent adoption of the federal permit as a state surface water discharge permit.

Fourth of July, Labor Day, Thanksgiving, and Christmas. In the past these days have not been excluded from the testing regiment and at times it has been challenging to coordinate employee's availability, sample collection time, delivery, and meeting holding times to the contracting lab, which may be closed, or open but running on a reduced schedule."

RESPONSE 2:

In the draft permit, monitoring for fecal coliform is required five times per week and monitoring for enterococci is required twice per week. Based upon this request, the permittee may suspend testing for fecal coliform during the 6 major holidays listed above. This allowance would result in a total of four tests during each week that includes a holiday. Enterococci should continue to be monitored twice per week even during weeks that include a holiday and may be scheduled on days other than the holiday. This allowance has been inserted into the final permit.

Based upon feedback from NHDES-WD, this allowance has also been applied to the 2012 final permit for EnviroSystems Inc. (NH0022055).