

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"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, § 26-53),

**Division of Fisheries and Wildlife  
Commonwealth of Massachusetts**

is authorized to discharge from the facility located at

**Sandwich State Fish Hatchery  
164 Route 6A  
Sandwich, MA**

to receiving water named

**Unnamed tributary to Dock Creek (MA96-86)**

in accordance with conditions set forth herein.

This permit shall become effective on the date of signature.

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

This permit supersedes the permit issued on September 26, 2007.

This permit consists of 15 pages in Part I including effluent limitations and monitoring requirements, 10 pages in Attachment A – Marine Acute Toxicity Test Procedure and Protocol (July 2012), and 25 pages in Part II Standard Conditions.

Signed this 24th day of November, 2015

/S/SIGNATURE ON FILE

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Ken Moraff, Director  
Office of Ecosystem Protection  
Environmental Protection Agency  
Boston, MA

/S/SIGNATURE ON FILE

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David Ferris, Director  
Commonwealth of Massachusetts  
Massachusetts Wastewater Management  
Program  
Department of Environmental Protection  
Boston, MA

**Part I.**

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated fish culture water from outfall serial number 001 to an unnamed tributary to Dock Creek. Such discharges shall be monitored as specified below.

Parameter	Effluent Limitations		Monitoring Requirements <sup>1</sup>	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	Daily <sup>2</sup>	Instantaneous
pH	6.5-8.5 S.U.		Monthly	Grab
BOD <sub>5</sub>	***	5 mg/l 58 lbs/day	2/Quarter <sup>3,4,5</sup>	Composite <sup>6</sup>
TSS	***	10 mg/l 116 lbs/day	2/Quarter <sup>3,4,5</sup>	Composite <sup>6</sup>
Total Nitrogen, as N (effluent) <sup>7</sup>	Report mg/l 14 lbs/day	Report mg/l	2/Quarter <sup>3,4,5</sup>	Composite <sup>6</sup>
Total Nitrogen, as N (influent) <sup>8</sup>	Report mg/l Report lbs/day	Report mg/l	1/Quarter <sup>3,5</sup>	Grab
Total Phosphorus, as P	***	Report mg/l	2/Quarter <sup>4</sup>	Composite <sup>6</sup>
Total Residual Chlorine	7.5 µg/l	13 µg/l	Daily, when chlorine in use	Grab
Dissolved Oxygen (in-stream)	***	≥6.0 mg/l	Monthly <sup>9</sup>	Grab
Hydrogen Peroxide	***	0.7 mg/l	1/event when PEROX-AID in use	Grab
Dissolved Oxygen <sup>10</sup>	≥6.0 mg/l		1/event when formalin in use	Grab
Formaldehyde <sup>10</sup>	***	0.74 mg/l	1/event when formalin in use	Grab
Whole Effluent Toxicity <sup>10, 11, 12</sup>	***	LC <sub>50</sub> ≥ 100%	1/event when formalin in use	Grab

Footnotes are listed on pages 3-4.

## Footnotes

1. Effluent samples shall be representative of the discharge and shall be taken at the weir structure located at the downstream end of hatchery raceways I and J prior to mixing with the receiving water unless an alternative location is specified below. Samples must be tested using analytical methods found in 40 C.F.R. § 136, or alternative methods approved by EPA in accordance with the procedures in 40 C.F.R. § 136.
2. Average monthly and maximum daily flows shall be reported. Daily flows shall be measured at the weir structure located at the downstream end of hatchery raceways I-J.
3. For the purposes of a sampling frequency of 2/Quarter, quarters are defined as the interval of time between the months of: January through March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive.
4. Twice quarterly BOD<sub>5</sub>, TSS, and Total Nitrogen samples shall be taken following each quiescent zone cleaning event when pollutant concentrations are likely to be at a maximum. During months when Total Phosphorus *and* BOD<sub>5</sub>, TSS, and Total Nitrogen monitoring is required, Total Phosphorus monitoring for the four parameters shall be conducted concurrently.
5. Mass loadings for BOD<sub>5</sub>, TSS, and Total Nitrogen are to be calculated using the following equation: Quantity (lbs/day) = Average Monthly Flow (MGD) x concentration (mg/l) x 8.34 (conversion factor).
6. The composite samples shall consist of at least eight (8) grab samples collected at approximately equal intervals over twenty-four (24) hours, and shall include a representative sample of overflow at the terminal raceways during cleaning operations. If raceways are vacuumed, a representative composite sample shall be taken during the vacuum cycle.
7. Total Nitrogen shall be determined by performing the “total Kjeldahl Nitrogen (as N)” test and the “Nitrate-Nitrite (as N)” test and adding the two results together to produce a value of Total Nitrogen (in milligrams per liter). The mass-based average monthly Total Nitrogen effluent limit is an annual average and shall be reported as a rolling average. The value shall be calculated using the current reporting period value for Total Nitrogen in milligrams per liter and the annual average flow calculated using the maximum daily flow from the current reporting period and previous eleven (11) months.
8. Total Nitrogen samples shall be collected from the hatchery source water (influent) once per quarter for three years from the effective date of the permit. The quarterly influent nitrogen sample shall be taken concurrent with one of the required twice quarterly effluent samples. Grab samples representative of the well water prior to

entering the hatchery raceways shall be collected from each of the four wells during each monitoring event. The permittee shall report the maximum daily Total Nitrogen concentration (mg/l) as the highest value observed from the four wells, and the average monthly value as the average concentration observed at the four wells during one sampling event.

9. In-stream dissolved oxygen shall be sampled at a location in the receiving water approximately 15 feet downstream of Outfall 001 once per month from May 1 to September 30. Minimum daily dissolved oxygen shall be reported.
10. Sampling for formaldehyde, dissolved oxygen, and whole effluent toxicity shall be conducted only during formalin use. Sampling is not required if formalin is not used and the No Data Indicator Code for No Discharge ("C") shall be reported on the Discharge Monitoring Report (DMR) for that month. The permittee is required to conduct acute Whole Effluent Toxicity (WET) testing following the protocol in Attachment A to this permit. The test species are mysid shrimp (*Americamysis bahia*) and inland silverside (*Menidia beryllina*). Grab samples for formaldehyde, dissolved oxygen, and WET shall be taken from a location at the end of the raceway(s) being treated prior to mixing with effluent from any other raceways.
11. The LC<sub>50</sub> is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a limit of 100% means that a sample of 100% effluent (*i.e.*, no dilution) shall cause no more than a 50% mortality rate.
12. If the toxicity test using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in Attachment A (Marine Acute Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance, which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for Discharge Monitoring Report Forms*, which may be found on the EPA Region 1 website at. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in Attachment A. Any modification or revocation to this guidance will be transmitted to the permittees. However, at any time, the permittee may choose to contact EPA directly using the approach outlined in Attachment A.

**Part I.A. (continued)**

2. The discharge shall not cause a violation of the water quality standards of the receiving waters.
3. The pH of the effluent shall not be less than 6.5 nor greater than 8.5 standard units (SU) and not more than 0.2 units outside of the natural background range. There shall be no change from natural background conditions that would impair any designated use assigned to a Class SA water.
4. The effluent shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to this class.
5. The effluent shall be free from floating, suspended, and settleable solids in concentrations or combinations that would impair any use assigned to a Class SA water, that would cause aesthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom.
6. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.
7. There shall be no discharge of untreated wastewaters resulting from cleaning accumulated solids in the raceways, culture tanks, screens, and associated equipment.
8. The permittee shall notify EPA and the State within twenty-four (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 the reporting requirements in Standard Conditions, Part II.D.1.e.
9. Any change in: 1) the fish species to be raised at this facility or, 2) the development stage to be attained at this facility, will require written notification to EPA and MassDEP and possible permit modification.
10. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
  - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
    - (1) One hundred micrograms per liter (100 ug/l);

- (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2- methyl-4, 6- dinitrophenol; and one milligram per liter (1 mg/l) for antimony.
    - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7); or
    - (4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f).
  - b. That any activity has occurred or will occur which would result in the discharge, on a non- routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
    - (1) Five hundred micrograms per liter (500 ug/l);
    - (2) One milligram per liter (1 mg/l) for antimony;
    - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7); or
    - (4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f).
  - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.
- 11. This permit shall be modified, or revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Act, if the effluent standard or limitation so issued or approved:
  - a. contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or
  - b. controls any pollutant not limited by this permit.

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

## **B. NARRATIVE EFFLUENT LIMITATION REQUIREMENTS**

### **1. Drug Use**

Except as noted below, the permittee must notify EPA and the MassDEP in accordance with the following procedures of any investigational new animal drug (INAD) or extra-label drug use which may lead to a discharge of the drug to waters of the United States as stipulated below. However, reporting is not required for any INAD or extra-label drug use that has been previously approved by the US Food and Drug Agency (USFDA) for a different species or disease if the INAD or extra-label use is at or below the approved dosage and involves similar conditions of use.

- a. The permittee must provide to EPA and MassDEP a written report of the impending use of INAD within seven (7) days of agreeing or signing up to participate in an INAD study. The written report must identify the INAD to be used, method of use, the dosage, and the disease or condition the INAD is intended to treat.
- b. For INAD's and extra-label drug uses, the permittee must provide an oral report to EPA and MassDEP as soon as possible, preferably in advance of use, but no later than seven (7) days after initiating use of that drug. The oral report must identify the drugs used, method of application, and the reason for using that drug.
- c. For INAD's and extra-label drug uses, the permittee must provide a written report to EPA and MassDEP within thirty (30) days after initiating use of that drug. The written report must identify the drug used and include: the reason for treatment, date(s) and time(s) of the addition (including duration), method of application; and the amount added.

### **2. Structural Failure and/or Damage to Culture Units**

The permittee must notify EPA and MassDEP in accordance with the following procedures when there is a "reportable failure" in, 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. For this facility, a "reportable failure" applies only to active culture units (ones that contain fish and flowing water) and their ancillary components and refers to the collapse or damage of a rearing unit or its wastewater treatment system; damage to pipes, valves, and other plumbing fixtures; and damage or malfunction to screens or physical barriers in the system, which would prevent the rearing unit from containing water, sediment (i.e. settled solids), and the aquatic animals being reared. Wastewater treatment systems include ponds or

settling tanks to which cleaning water is directly discharged and culture units which are used for the temporary storage of settled solids removed from active culture units.

- b. The permittee must provide an oral report to EPA and MassDEP within twenty-four (24) hours of discovery of any reportable failure as defined in item 2.a. or damage that results in a material discharge of pollutants. The report shall describe the cause of the failure or damage in the containment system and identify materials that have been released to the environment as a result of that failure.
- c. The permittee must provide a written report to EPA and MassDEP within seven (7) days of discovery of the failure or damage documenting the cause, an estimate of the material released as a result of the failure or damage, and steps being taken to prevent a recurrence.

### 3. Spills

In the event a spill of drugs, pesticides or feed occurs that results in a discharge to “waters” or “a water” of the United States, the permittee must provide an oral report of the spill to EPA and MassDEP within twenty-four (24) hours of its occurrence and a written report within seven (7) days to the above Agencies. The report shall include the identity and quantity of the material spilled.

### 4. Best Management Practices (BMP) Plan

The permittee must implement and maintain a BMP Plan (PLAN) on site that describes how the following requirements will be achieved. The permittee will make the current version of that PLAN available to EPA and/or the MassDEP upon request. The permittee shall implement the intent of the BMP following requirements upon the permit’s effective date. The permittee, however, has ninety (90) days following the permit’s effective date to certify in writing to EPA and MassDEP that a written PLAN has been developed in accordance with requirements listed in this part and must submit that certification with the appropriate DMR.

Further, the permittee shall amend the PLAN within thirty (30) days following any change in facility design, construction, operation, or maintenance which affects the potential for the discharge of pollutants into surface waters or after the EPA and/or MassDEP determine certain changes are required following an event that results in non-compliance, a facility inspection, or review of the PLAN. The permittee shall place in the PLAN a written documentation of each amended change along with a brief description stating the reason for the amendment, including the date of the change that triggered the amendment. The permittee shall also document what date the amended PLAN was implemented.

The PLAN must address, at a minimum, the following requirements:

a. Solids Control

- i. Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the United States.
- ii. In order to minimize the discharge of accumulated solids from settling tanks, basins and production systems, identify and implement procedures for routine cleaning of rearing units and settling tanks, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting of aquatic animals in the production system. Part I.A.7. prohibits the direct discharge of cleaning water absent some form of solids removal prior to discharge.
- iii. If any material is removed from the rearing units and/or settling tanks, describe where it is to be placed and the techniques used to prevent it from entering the surface waters from any on-site storage. If the material is removed from the site, describe who received the material and its method of disposal and/or reuse.
- iv. Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the United States, except in cases where EPA and MassDEP authorizes such discharges in order to benefit the aquatic environment.

b. Biological Control

- i. Describe in detail the precautions that will be exercised by the facility to prevent aquatic organisms that are neither indigenous nor naturalized to Massachusetts waters from becoming established in the local surface waters.
- ii. Provide a description of any storage and/or treatment strategies designed to prevent biological pollution (non-indigenous organisms including fish parasites and fish pathogens and dead or dying fish) from entering the receiving water when the cultured fish population or a portion thereof are showing signs of stress.

c. Materials Storage

- i. Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to water of the United States.
- ii. Implement procedures for properly containing, cleaning, and disposing of any spilled material.

d. Structural Maintenance

- i. Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.
- ii. Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

e. Recordkeeping

- i. In order to show how representative feed conversion ratios were calculated, maintain records documenting the feed amounts and estimates of the number and weight of aquatic animals for each rearing unit.
- ii. Keep records that document the frequency of cleaning, inspections, repairs and maintenance. In addition, records of all medicinal and chemical usage (i.e., for each occurrence) at the facility shall be recorded and filed in the PLAN to include the dosage concentration, frequency of application (hourly, daily, etc.) and the duration (hours, days) of treatment, and the method of application.

f. Training

- i. In order to ensure the proper clean-up and disposal of material, adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.
- ii. Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

g. Aquaculture Drugs and Chemicals Used for Disease Control and/or Prevention

List in the PLAN all aquaculture drugs and chemicals including all INAD and extra-label drugs and for each, identify:

- i. Product name and manufacturer.
- ii. Chemical formulation.
- iii. Purpose/reason for its use.
- iv. Dosage concentration, frequency of application (hourly, daily, etc.) and the duration (hours, days) of application.
- v. The method of application.
- vi. Material Safety Data Sheets (MSDS), Chemical Abstracts Service Registry number for each active therapeutic ingredient.
- vii. The method or methods, if any, used to detoxify the wastewater prior to its discharge.
- viii. Information on the persistence and toxicity in the environment.
- ix. Information on the USFDA approval for the use of said medication or chemical on fish or fish related products used for human consumption.
- x. Available aquatic toxicity data (vendor data, literature data, etc.); Lethal Concentration to 50 percent test organisms (LC<sub>50</sub>) at 48 and/or 96 hours and No Effect Level (NOEL) concentrations for typical aquatic organisms (salmon, trout, daphnia, fathead minnow, etc.).

## 5. General Definitions

- a. Approved Dosage - the dose of a drug that has been found to be safe and effective under the conditions of a new animal drug application.
- b. Aquatic Animal Containment System - a culture or rearing unit such as a raceway, pond, tank, net or other structure used to contain, hold or produce aquatic animals. The containment system includes structures designed to hold sediments and other materials that are part of a wastewater treatment system.
- c. Drug - any substance defined as a drug in section 201(g)(2) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. 321).
- d. Extra-label Drug Use - a drug approved under the Federal Food, Drug and Cosmetic Act that is not used in accordance with the approved label direction, see 21 CFR Part 530.

- e. Investigational New Animal Drug (INAD) - drug for which there is a valid exemption in effect under section 512(j) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. 360b(j), to conduct experiments.
- f. New Animal Drug Application - defined in 512(b)(1) of the Federal Food, Drug, and Cosmetic Act [21 U.S.C. 360(b)(1)].
- g. Pesticide - any substance defined as a “pesticide” in section 2(u) of the Federal Insecticide, Fungicide, and Rodenticide Act [7 U.S.C. 136(u)].

### **C. MONITORING AND REPORTING**

The monitoring program in the permit specifies sampling and analysis, which will provide continuous information on compliance and the reliability and effectiveness of the installed pollution abatement equipment. The approved analytical procedures found in 40 CFR Part 136 are required unless other procedures are explicitly required in the permit. The Permittee is obligated to monitor and report sampling results to EPA and the MassDEP within the time specified within the permit. Unless otherwise specified in this permit, the permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

#### **1. Submittal of DMRs Using NetDMR**

The permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and MassDEP no later than the 15th day of the month electronically using NetDMR. When the permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or MassDEP.

#### **2. Submittal of Reports as NetDMR Attachments**

Unless otherwise specified in this permit, the permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. Permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. (See Part I.C.5. for more information on state reporting.) Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15<sup>th</sup> day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this permit.

#### **3. Submittal of Requests and Reports to EPA**

The following requests, reports, and information described in this permit shall be submitted to the EPA NPDES Applications Coordinator in the EPA Office

Ecosystem Protection (OEP).

- a. Transfer of permit notice
- b. Request for changes in sampling location
- c. Notification of proposal to add or replace chemicals and bio-remedial agents including microbes

These reports, information, and requests shall be submitted to EPA/OEP electronically at [R1NPDES.Notices.OEP@epa.gov](mailto:R1NPDES.Notices.OEP@epa.gov) or by hard copy mail to the following address:

**U.S. Environmental Protection Agency  
Office of Ecosystem Protection  
EPA/OEP NPDES Applications Coordinator  
5 Post Office Square - Suite 100 (OEP06-03)  
Boston, MA 02109-3912**

4. Submittal of Reports in Hard Copy Form

Written notifications required under Part II Standard Conditions shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals submitted to EPA at the following address:

**U.S. Environmental Protection Agency  
Office of Environmental Stewardship  
Water Technical Unit  
5 Post Office Square - Suite 100 (OES04-4)  
Boston, MA 02109-3912**

5. State Reporting

Unless otherwise specified in this permit, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.C.3, I.C.4, and I.C.5 also shall be submitted to the State at the following addresses:

**MassDEP – Southeast Region  
Bureau of Water Resources  
20 Riverside Drive  
Lakeville, MA 02347**

Copies of toxicity tests only shall be submitted to:

**Massachusetts Department of Environmental Protection  
Watershed Planning Program  
8 New Bond Street  
Worcester, Massachusetts 01606**

7. Verbal Reports and Verbal Notifications

Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to MassDEP. This includes verbal reports and notifications which require reporting within 24 hours. (As examples, see Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.) Verbal reports and verbal notifications shall be made to EPA's Office of Environmental Stewardship at:

**U.S. Environmental Protection Agency  
Office of Environmental Stewardship  
5 Post Office Square, Suite 100 (OES04-4)  
Boston, MA 02109-3912  
617-918-1510**

**D. STATE PERMIT CONDITIONS**

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 C.M.R. 3.19, are hereby incorporated by reference into this state surface water discharge permit.
2. This authorization also incorporates the state water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 C.M.R. 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 C.M.R. 3.11.
3. 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 this permit as issued by the other agency, unless and until

each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as a NPDES Permit issued by the U.S.

Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

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

**I. GENERAL REQUIREMENTS**

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

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

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

**II. METHODS**

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

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

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

**III. SAMPLE COLLECTION**

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

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<sup>1</sup> For this protocol, total residual chlorine is synonymous with total residual oxidants.  
(July 2012)

prior to sample use for toxicity testing. If performed on site the results should be included on the chain of custody (COC) presented to WET laboratory.

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

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

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

#### **IV. DILUTION WATER**

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

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

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

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

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

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

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

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

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

and

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

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

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

## **V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA**

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

**EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE MYSID, AMERICAMYSIS BAHIA 48 HOUR TEST<sup>1</sup>**

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1. Test type	48hr Static, non-renewal
2. Salinity	25ppt $\pm$ 10 percent for all dilutions by adding dry ocean salts
3. Temperature (°C)	20°C $\pm$ 1°C or 25°C $\pm$ 1°C, temperature must not deviate by more than 3°C during test
4. Light quality	Ambient laboratory illumination
5. Photoperiod	16 hour light, 8 hour dark
6. Test chamber size	250 ml (minimum)
7. Test solution volume	200 ml/replicate (minimum)
8. Age of test organisms	1-5 days, <u><math>\leq</math> 24 hours age range</u>
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 <u>Artemia</u> naupli while holding prior to initiating the test
13. Aeration <sup>2</sup>	None
14. Dilution water	5-30 ppt, +/- 10%; Natural seawater, or deionized water mixed with artificial sea salts
15. Dilution factor	$\geq$ 0.5
16. Number of dilutions <sup>3</sup>	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:

- <sup>1</sup> Adapted from EPA 821-R-02-012.
- <sup>2</sup> If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks are recommended.
- <sup>3</sup> When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND TOXICITY TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA 48 HOUR TEST<sup>1</sup>**

---

1. Test Type	48 hr Static, non-renewal
2. Salinity	25 ppt $\pm$ 10 % by adding dry ocean salts
3. Temperature	20°C $\pm$ 1°C or 25°C $\pm$ 1°C, temperature must not deviate by more than 3°C during test
4. Light Quality	Ambient laboratory illumination
5. Photoperiod	16 hr light, 8 hr dark
6. Size of test vessel	250 mL (minimum)
7. Volume of test solution	200 mL/replicate (minimum)
8. Age of fish	9-14 days; 24 hr age range
9. No. fish per chamber	10 (not to exceed loading limits)
10. No. of replicate test vessels per treatment	4
11. Total no. organisms per concentration	40
12. Feeding regime	Light feeding using concentrated <u>Artemia</u> nauplii while holding prior to initiating the test
13. Aeration <sup>2</sup>	None
14. Dilution water	5-32 ppt, +/- 10% ; Natural seawater, or deionized water mixed with artificial sea salts.
15. Dilution factor	$\geq 0.5$
16. Number of dilutions <sup>3</sup>	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:

- <sup>1</sup> Adapted from EPA 821-R-02-012.
- <sup>2</sup> If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks recommended.
- <sup>3</sup> When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

V.1. Test Acceptability Criteria

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

V.2. Use of Reference Toxicity Testing

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

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

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

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

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

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

## **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.

---

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

---

### Superscript:

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

<sup>\*2</sup> Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

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

## **VII. TOXICITY TEST DATA ANALYSIS**

### LC50 Median Lethal Concentration

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

Methods of Estimation:

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

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

### No Observed Acute Effect Level (NOAEL)

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

## **VIII. TOXICITY TEST REPORTING**

A report of results must include the following:

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

Please note: The NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) are available on EPA's website at

<http://www.epa.gov/NE/enforcementandassistance/dmr.html>

In addition to the summary sheets the report must include:

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

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## NPDES PART II STANDARD CONDITIONS

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### PART II. A. GENERAL REQUIREMENTS

#### 1. Duty to Comply

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

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

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

#### 2. Permit Actions

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

#### 3. Duty to Provide Information

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

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### 4. Reopener Clause

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

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

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

### 5. Oil and Hazardous Substance Liability

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

### 6. Property Rights

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

### 7. Confidentiality of Information

- a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).
- b. Claims of confidentiality for the following information will be denied:
  - (1) The name and address of any permit applicant or permittee;
  - (2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

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8. Duty to Reapply

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

9. State Authorities

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

10. Other Laws

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

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

### b. Bypass not exceeding limitations

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

### c. Notice

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

### d. Prohibition of bypass

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

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

## 5. Upset

- a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

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

- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
  - (2) The permitted facility was at the time being properly operated;
  - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
  - (4) The permittee complied with any remedial measures required under B.3. above.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

### PART II. C. MONITORING REQUIREMENTS

#### 1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.
- c. Records of monitoring information shall include:
  - (1) The date, exact place, and time of sampling or measurements;
  - (2) The individual(s) who performed the sampling or measurements;
  - (3) The date(s) analyses were performed;
  - (4) The individual(s) who performed the analyses;
  - (5) The analytical techniques or methods used; and
  - (6) The results of such analyses.
- d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by

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

### 2. Inspection and Entry

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

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

## PART II. D. REPORTING REQUIREMENTS

### 1. Reporting Requirements

- a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:
  - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
  - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
  - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. Anticipated noncompliance. The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. Transfers. This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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

- d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
  - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
  - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
  - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. Twenty-four hour reporting.
  - (1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
  - (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
    - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
    - (b) Any upset which exceeds any effluent limitation in the permit.
    - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
  - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
- g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.
- h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.

### 2. Signatory Requirement

- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)
- b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

### 3. Availability of Reports.

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

## PART II. E. DEFINITIONS AND ABBREVIATIONS

### 1. Definitions for Individual NPDES Permits including Storm Water Requirements

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

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

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

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

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

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

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

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

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

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

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

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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

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

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

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

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

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

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

*Discharge of a pollutant* means:

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

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

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

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

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

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

*EPA* means the United States “Environmental Protection Agency”.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- (a) From which there is or may be a “discharge of pollutants”;
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source”; and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site”.

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

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

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

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

*NPDES* means “National Pollutant Discharge Elimination System”.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
  - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
  - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
  - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*Waters of the United States* means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;
- (b) All interstate waters, including interstate “wetlands”;
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
  - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
  - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

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

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

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

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

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

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

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

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

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## NPDES PART II STANDARD CONDITIONS (January, 2007)

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

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

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

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

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

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

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

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

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

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

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

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

*Range land* is open land with indigenous vegetation.

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

## NPDES PART II STANDARD CONDITIONS (January, 2007)

*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.

## NPDES PART II STANDARD CONDITIONS (January, 2007)

*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 <sub>2</sub>	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

NPDES PART II STANDARD CONDITIONS  
(January, 2007)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M <sup>3</sup> /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 <sub>3</sub> -N	Ammonia nitrogen as nitrogen
NO <sub>3</sub> -N	Nitrate as nitrogen
NO <sub>2</sub> -N	Nitrite as nitrogen
NO <sub>3</sub> -NO <sub>2</sub>	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

NPDES PART II STANDARD CONDITIONS  
(January, 2007)

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 <sub>50</sub>	LC <sub>50</sub> is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC <sub>50</sub> = 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  
5 POST OFFICE SQUARE, SUITE 100  
BOSTON, MASSACHUSETTS 02109-3912**

**FACT SHEET**

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

NPDES PERMIT NUMBER: **MA0110027**

PUBLIC NOTICE START AND END DATES: August 12, 2015 – September 10, 2015

NAME AND MAILING ADDRESS OF APPLICANT:

**Division of Fisheries and Wildlife  
Commonwealth of Massachusetts  
90 East Street  
Belchertown, MA 01007**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Sandwich State Fish Hatchery  
164 Route 6A  
Sandwich, MA 02563**

RECEIVING WATER(S):

**Unnamed tributary to Dock Creek (MA96-86)**

RECEIVING WATER CLASSIFICATION(S): **Class SA**

SIC CODE: **0921**

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## **1.0 PROPOSED ACTION, TYPE OF FACILITY, AND DISCHARGE LOCATION**

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### **1.1 Proposed Action**

The Massachusetts Division of Fisheries and Wildlife (MassWildlife, or the permittee) operates the Sandwich State Fish Hatchery (SSFH, or the hatchery) in Sandwich, MA (see Attachment A for site location) primarily engaged in the production of brook, brown, tiger trout, and rainbow trout to support stocking in Massachusetts rivers and lakes.

MassWildlife has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge into Dock Creek. The previous permit was issued on September 26, 2007 (the 2007 permit, or current permit) and expired on November 30, 2012. EPA received a permit renewal application from MassWildlife dated May 18, 2012. Since the permit renewal application was deemed timely and complete by EPA, the permit has been administratively continued until a new permit becomes effective.

### **1.2 Type of Facility and Discharge Location**

The primary activities at the SSFH include year-round production of brook, brown, tiger, and rainbow trout for stocking rivers and lakes in the Commonwealth. Brown and rainbow trout are raised from egg to stocking-sized yearling fish. SSFH obtains rainbow trout eggs for production from federal hatcheries that meet the Division's strict disease certification standards; a limited number of broodstock fish are maintained for production of brown and brook trout eggs. The facility consists of a hatch house and 7 interconnected concrete raceways (see Attachment B to the Fact Sheet). The hatchery also maintains several buildings including an office, a workshop, and several storage areas.

A concentrated aquatic animal production (CAAP) facility is defined, based on criteria found in 40 C.F.R. § 122.24(b) and 40 C.F.R. Part 122 Appendix C, as a hatchery, fish farm, or other facility that "contains, grows, or holds cold water fish species or other cold water aquatic animals in ponds, raceways, or other similar structures which discharge at least 30 days per year but does not include facilities which produce less than 9,090 harvest weight kilograms (approximately 20,000 pounds) of aquatic animals per year; and facilities which feed less than 2,272 kilograms (approximately 5,000 pounds) of food during the calendar month of maximum feeding." According to MassWildlife, average annual production is estimated at 7,400 pounds (lbs) of brook trout, 5,100 lbs of brown trout, 5,800 lbs of tiger trout, and 41,000 lbs of rainbow trout. During the month of maximum feeding (March), the facility estimates use of 9,800 lbs of feed. Based on their production levels and feed use, as well as monthly Discharge Monitoring Reports (DMRs), SSFH will likely discharge more than 30 days per year and produce more than 20,000 lbs harvest weight of fish per year during the next permit cycle. Therefore the hatchery is defined as a CAAP facility according to the regulations at 40 C.F.R. § 122.24(c) and discharge must be authorized by a NPDES permit.

Production generally begins in September and peaks in spring. Fish are generally moved to stocking areas in May and June. The hatchery uses a continuous flow-through system supplied by a combination of water primarily supplied by four gravel packed wells with a small volume (about 5%) supplied by artesian well points. In the hatch house, eggs are incubated and fry are reared to fingerling sized (about two inches) in 14 fiberglass tanks. When they reach fingerling size, fish are moved to outdoor raceways. During cleaning, effluent from the hatch house raceways drains to the

downstream end of pool F and through raceway series I-L.

The hatchery currently operates 7 outdoor interconnected raceways comprised of 62 pools separated by a screen and dam board. Raceway series M-N (designated in Attachment B) are not in use. A fish-free settling basin/water distribution box is located at the downstream end of each series of pools and additional settling basins are located between the pools in some raceway series. The three pools in raceway series I-J, located just upstream of the drainage outfall, are used exclusively as settling ponds. Monitoring is conducted downstream of the settling pools in raceway series I-J prior to discharging to Dock Creek.

Settled solids are removed with a sewage vacuum or trash pump. Screens and dam boards are cleaned daily and quiescent zones are cleaned approximately once per week. Solids are disposed of in one of three settled waste pumping areas as shown in Attachment B. After fish are moved (either to another raceway series or offsite), individual raceways are drained and solids are removed with the vacuum pump. Pools are then cleaned with a brush and pressure washer before drying in the sun. Pools are not filled until needed for fish production. During weekly cleanings of the quiescent zones and more intensive raceway cleanings, dam boards are inserted at the downstream end of the raceway to prevent solids from discharging.

### **1.3 Chemicals, Drugs, and Disinfectants Currently Used at Sandwich State Fish Hatchery**

MassWildlife's biosecurity procedures, including obtaining eggs and fish from certified disease free sources, covering outdoor raceways with nets to minimize contact with birds, and limiting hatch house access, are designed to minimize the need for chemotherapeutic agents and medications. MassWildlife's goal is to use a few chemotherapeutic agents as possible. However, if a disease or parasitic outbreak occurs at the SSFH, a specific diagnosis is made by the Fish Pathologist and only drugs and chemicals approved by the U.S. Food and Drug Administration (FDA) for aquaculture or low regulatory priority drugs for aquaculture as regulated by the FDA are used. The hatchery follows all required FDA procedures and recommendations for use of any drugs or chemotherapeutic chemicals. Below is a list of all the chemicals/drugs that may be used at the SSFH along with their intended use.

37% formalin solution – for treatment of the FDA-approved species of external protozoan parasites and monogenetic trematodes on trout. Formalin has not been used at the hatchery in the past two permit cycles. Still, the Draft Permit retains limitations specific to the use of formalin should it be used in the future.

Oxytetracycline medicated feed – FDA approved use for treatment of ulcer disease, furunculosis, bacterial hemorrhagic septicemia and pseudomonas disease.

Sulfadimethoxine/ormetprim medicated feed (Romet 30) – FDA approved as medicated feed to treat furunculosis.

Hydrogen peroxide solution 35% (PEROX-AID®) – to control for the mortality of eggs due to saprolegniasis and bacterial gill disease of fish caused by *Flavobacterium branchiophilum*. FDA considers PEROX-AID® a low regulatory priority.

NaCl solution 0.5-3% - as an osmoregulatory aid for the relief of stress and prevention of shock in transport tank when moving fish and as a dip treatment to reduce excess mucous on the skin of fish caused by a heavy parasite load. FDA considers NaCl solution to be a low regulatory priority drug.

Florfenicol – to treat coldwater disease and furunculosis in trout as an in-feed antibiotic.

Tricaine S (MS222) - FDA approved use as a fish anesthetic.

All of the listed drugs that may be used at the SSFH are FDA-approved and administered in accordance with FDA recommendations. The Draft Permit contains effluent limitations that apply when formalin or hydrogen peroxide are in use. See sections entitled “Hydrogen Peroxide” and “Formalin” later in this Fact Sheet. The hatchery also may use PVP iodine during sterilization and disinfection of eggs. Sterilization water is drained onto the hatchery lawn outside of the hatch house in a location where it will not enter the effluent. Water containing NaCl solution and/or MS222 are also drained to the grass.

## **2.0 RECEIVING WATER DESCRIPTION**

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### **2.1 River Classification**

The hatchery’s outfall discharges directly to an unnamed tributary that travels approximately 2,000 feet through salt marsh before joining Dock Creek. *See* Attachment A for the location of the outfall. The limitations and conditions in the Draft Permit are designed to protect the designated uses of Dock Creek (MA96-86), a Class SA waterbody under the Massachusetts Surface Water Quality Standards (314 C.M.R. 4.06). Class SA waters are designated at 314 C.M.R. 4.05(4)(a) as excellent habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. In certain waters, excellent habitat for fish, other aquatic life, and wildlife may include, but is not limited to, seagrass. Where designated for shellfishing, these waters shall be suitable for shellfish harvesting without depuration (Approved and Conditionally Approved Shellfish Areas). These waters shall have consistently excellent aesthetic value.

### **2.2 Water Quality Assessment**

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls. Dock Creek is listed as Category 4A water (“TMDL complete”) impaired for fecal coliform in the 2012 303(d) list (Massachusetts Year 2012 Integrated List of Waters and proposed 2014 Integrated List of Waters). Dock Creek was included in the 2012 Addendum to the previously approved Final Pathogen Total Maximum Daily Load (TMDL) for the Cape Cod Watershed (MassDEP August 2012). According to the Final Pathogen TMDL, fecal contamination is most often a direct result of the improper management of human waste, excrement from barnyard animals, pet feces, and agricultural application of manure, large congregations of birds, and illicit boat discharges. In the 2012 Addendum to the Final Pathogen TMDL, the SSFH was eliminated as a contributing source of contamination.

### **3.0 PERMIT BASIS: STATUTORY AND REGULATORY AUTHORITY**

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#### **3.1 General Background**

The CWA prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 C.F.R. Parts 122, 124, 125, and 136. In this permit EPA considered (a) technology-based requirements, (b) water quality-based requirements, and (c) all limitations and requirements in the current permit, when developing the permit limits.

#### **3.2 Technology-Based Requirements**

Subpart A of 40 C.F.R. § 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA.

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (see 40 CFR §125 Subpart A) to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control technology (BCT) for conventional pollutants, and best available technology economically available (BAT) for toxic and non-conventional pollutants. In general, technology-based effluent guidelines for non-POTW facilities must have been 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 [See 40 C.F.R. §125.3(a)(2)]. Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit.

On August 23, 2004, EPA promulgated technology-based effluent limitations guidelines (ELGs) for the Concentrated Aquatic Animal Production (CAAP) Point Source Category at 40 C.F.R. Part 451, Subpart A (Flow-through and Recirculating Systems Subcategory) for facilities that contain, hold, or produce more than 100,000 pounds of aquatic animals per year. *See* 69 Fed. Reg. 51906 (August 23, 2004). Compliance with the newly promulgated effluent limitations guidelines for fish hatcheries is, effectively, from date of permit issuance. *See* 69 Fed. Reg. 51893 (August 23, 2004). In the final rule, EPA concluded that “the key element in achieving effective pollution control at CAAP facilities is a well-operated program to manage feeding, in addition to good solids management” (69 Fed. Reg. 51907). The promulgated ELGs require facilities to comply with specific operational and management requirements (*i.e.*, best management practices) for solids control, materials storage, structural maintenance, recordkeeping, and training. The ELGs are not applicable at the Sandwich State Fish Hatchery because the facility produces less than 100,000 pounds of aquatic animals per year. Still, the Draft Permit applies requirements to implement best management practices (BMPs) informed by the ELGs under best professional judgment and incorporates some of the requirements

of the ELGs, particularly the narrative requirements in the current permit in compliance with antibacksliding regulations at 40 C.F.R. § 122.44.

The effluent monitoring requirements have been established to yield data representative of the discharges under the authority of Section 308(a) of the CWA, according to regulations set forth at 40 C.F.R. §§ 122.41(j), 122.44(i) and 122.48. The approved analytical procedures are to be found in 40 C.F.R. § 136 unless other procedures are explicitly required in the permit.

### **3.3 Water Quality-Based Requirements**

Section 301(b)(1)(C) of the CWA requires that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when technology-based limitations would interfere with the attainment or maintenance of water quality in the receiving water.

Under Section 301(b)(1)(C) of the CWA and EPA regulations, NPDES permits must contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water quality standards. Water quality standards consist of three parts: (1) beneficial designated uses for a waterbody or a segment of a waterbody; (2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards, found at 314 C.M.R. 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established.

#### **3.3.1 Reasonable Potential**

The Draft Permit must limit any pollutant or pollutant parameter (conventional, non-conventional, and toxic) that is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to an excursion above any water quality standard (40 C.F.R. § 122.44(d)). An excursion occurs if the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining "reasonable potential" EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from the permit's re-issuance application, monthly discharge monitoring reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the indicator species used in toxicity testing; (4) the statistical approach outlined in *Technical Support Document for Water Quality-Based Toxics Control* (TSD), March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water.

#### **3.3.2 Dilution Factor**

Water quality-based effluent limitations are established using available dilution. Title 314 C.M.R. 4.03(3)(c) requires that water quality criteria must be applied at the most severe hydrologic condition, which, for coastal and marine waters, is established by MassDEP on a case-by-case basis. In all

cases, existing uses shall be protected and the selection of hydrologic condition shall not interfere with the attainment of designated uses. Dock Creek is a small, tidal creek that experiences no flow during low tide with the exception of minimal standing water. Therefore, no dilution has been used in calculating effluent limits.

### **3.3.3 Antidegradation**

The Commonwealth of Massachusetts' antidegradation provisions found in 314 C.M.R. § 4.04 ensure that provisions in 40 C.F.R. § 131.12 are met. These provisions ensure that all existing uses in the receiving water, along with the level of water quality necessary to protect those existing uses, are maintained and protected. The effluent limits in the Draft Permit should ensure that provisions in 314 C.M.R. § 4.04 are met. The State is also asked to certify that the antidegradation provisions in State law are met. Since there are no new or increased discharges being proposed with this permit reissuance EPA does not believe that the MassDEP is required to conduct an antidegradation review regarding this permit reissuance.

### **3.4 Antibacksliding**

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than the comparable effluent limitations in the previous permit unless in compliance with the antibacksliding requirements of the CWA. *See* Sections 402(o) and 40 C.F.R. § 122.44(l)(1) and (2). These antibacksliding provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances. Effluent limits based on BPJ, water quality, and state certification requirements must also meet the antibacksliding provisions found at Section 402(o) and 303(d)(4) of the CWA.

This Draft Permit complies with the anti-backsliding requirements of the CWA. All proposed limitations in the Draft Permit are at least as stringent as those included in the 2007 Permit with the exception of the maximum daily and average monthly ammonia nitrogen limitations, which are discussed further below.

## **4.0 OUTFALL DESCRIPTION**

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The Draft Permit authorizes the discharge of treated culture water from Outfall 001 subject to the effluent limitations and best management practices described below. Effluent from the hatchery is discharged at the terminal end of the raceways into a small creek on the property. The creek travels under Route 6A through salt marsh until combining with Dock Creek approximately 2,000 ft from the outfall location (see site map in Attachment A). A summary of discharge data from the facility's discharge monitoring reports from January 2008 to March 2015 is included in Attachment C.

## **5.0 PROPOSED PERMIT EFFLUENT LIMITATIONS AND CONDITIONS**

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### **5.1.1 Effluent Flow**

Prior the issuance of the current (2007) permit, EPA and MassDEP issued a permit to the SSFH in 2002 that included an average monthly limit of 1.4 million gallons per day (MGD) and maximum daily limit of 1.6 MGD. During the 2007 re-issuance of this permit, EPA determined that these flow

limits were occasionally exceeded because the flow varies naturally due to the springs located adjacent to the site and which supply a portion of the fish culture water. The current permit requires the permittee to report the maximum daily and average monthly flow but does not include limits on flow. According to DMR data submitted between January 2008 and March 2015, maximum daily flow at SSFH ranged from 0.9 to 1.4 MGD with a long-term average of 1.1 MGD and average monthly flow ranged from 0.8 to 1.2 MGD with an average of 1.0 MGD (see Attachment C). These values are consistent with the limits in the 2002 permit and upon which the mass-based pollutant discharge limits were based. The Draft Permit requires the permittee to report the average monthly and maximum daily flow limits. Daily monitoring will continue to be conducted at the weir structure located at the hatchery discharge.

### **5.1.2 Biochemical Oxygen Demand (BOD<sub>5</sub>)**

Biochemical oxygen demand (BOD<sub>5</sub>) is used to measure the amount of oxygen consumed by microorganisms when they decompose the organic matter in a waterbody. The greater the BOD<sub>5</sub>, the greater the degree of pollution and the less oxygen available to aquatic life. The current permit includes mass- and concentration-based BOD<sub>5</sub> maximum daily limitations of 58 pounds per day (lbs/day) and 5 mg/l carried forward from the previous permit cycle. These limitations were based on Best Professional Judgment (BPJ) from a review of effluent data from CAAP facilities located in Massachusetts and New Hampshire, as well as review of general NPDES permits developed for similar facilities in Idaho, Oregon and South Carolina. Recently re-issued permits for CAAP facilities in Massachusetts and New Hampshire include BOD<sub>5</sub> limits no more stringent than these limits. The mass-based maximum daily limit of 58 lbs/day was based on an average flow of 1.4 MGD, which is slightly higher than the reported average flow of about 1 MGD from January 2008 through March 2015.

According to twice quarterly DMR data between January 2008 and March 2015, the maximum daily mass of BOD<sub>5</sub> ranged from 18.0 lbs/day to 41.9 lbs/day with an average maximum daily load of 26.9 lbs/day. The maximum daily BOD<sub>5</sub> concentration ranged from 2.1 to 4.8 mg/l at an average maximum daily concentration of 3.3 mg/l (see Attachment C). Neither the mass- or concentration-based limits were exceeded in the last permit cycle.

The current mass-based permit limit of 58 lbs/day is based on a flow of 1.4 MGD consistent with the limit in the 2002 NPDES permit.<sup>1</sup> During issuance of the current permit in 2007, EPA calculated maximum daily mass-based limit for BOD<sub>5</sub> using, according to the fact sheet, an average monthly flow value of 1.4 MGD. As stated above, the actual reported flow values for the facility are consistently less than 1.4 MGD and the facility's BOD<sub>5</sub> loadings are substantially less than the permitted value of 58 lbs/day. However, a discharge of 1.4 MGD is consistent with the 99<sup>th</sup> percentile value of the reported maximum daily flow values between January 2008 and March 2015 based on calculations performed by EPA for this permit issuance. EPA believes that a flow of 1.4 MGD is the appropriate value for calculating the maximum daily mass-based BOD<sub>5</sub> limit.

EPA has carried forward the current permit limits of 5 mg/L and 58 lbs/day in the Draft Permit in accordance with antibacksliding regulations at 40 C.F.R. § 122.44(l)(1). The Draft Permit continues to require a frequency of twice quarterly composite monitoring at Outfall 001.

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<sup>1</sup> Maximum Daily BOD<sub>5</sub> = 1.4 MGD \* 5 mg/L \* 8.3379 (conversion factor) = 58 lbs/day

### **5.1.3 Total Suspended Solids (TSS)**

The current permit includes mass- and concentration-based maximum daily TSS limitations of 116 lbs/day and 10 mg/l carried forward from the previous permit cycle. These limitations were based on Best Professional Judgment (BPJ) from a review of effluent data from CAAP facilities located in Massachusetts and New Hampshire, as well as review of general NPDES permits developed for similar facilities in Idaho, Oregon and South Carolina. Recently re-issued permits for CAAP facilities in Massachusetts and New Hampshire include TSS limits no more stringent than these limits. As with BOD<sub>5</sub>, the mass-based maximum daily limit of 116 lbs/day was based on an average flow of 1.4 MGD, which is slightly higher than the reported average flow of about 1 MGD from January 2008 through March 2015.

According to twice quarterly DMR data between January 2008 and March 2015, the maximum daily mass of TSS ranged from 4.0 to 49.0 lbs/day with an average of 19.1 lbs/day. The maximum daily TSS concentration ranged from 0.1 to 5.4 mg/l at an average of 2.3 mg/l (see Attachment C). The SSFH generally displays excellent solids control and consistently exhibits among the lowest levels of TSS of the MassWildlife hatcheries.

Neither the mass-based limitation of 116 lb/day nor the concentration-based maximum daily limit of 10 mg/l was exceeded during the permit term. The highest reported TSS value (49 lbs/day in February 2015) occurred when the hatchery experienced unprecedented levels of snowfall, which limits the facility's ability to maintain nets over the raceways to keep birds and other predators away from the fish. In addition, the hatchery raceways were among the only sources of running water during the month, which also likely attracted a number of birds to the raceways. The poor weather, which likely led to unusually high numbers of birds at the hatchery, likely contributed to the elevated TSS concentration during this month as compared to the other reported TSS values during the current permit term. The continued use of the nets to minimize predation, coupled with ongoing feed management and solids handling practices, will continue to minimize the discharge of TSS to the receiving water. The TSS load in the quarterly sample reported in May 2015, subsequent to the elevated February sample, was 20 lbs/day, which is consistent with the long-term average load.

The current mass-based permit limit of 116 lbs/day is based on a flow of 1.4 MGD consistent with the limit in the 2002 NPDES permit.<sup>2</sup> During issuance of the current permit in 2007, EPA calculated maximum daily mass-based limit for TSS using, according to the fact sheet, an average monthly flow value of 1.4 MGD. As stated above, the actual reported flow values for the facility are consistently less than 1.4 MGD and the facility's TSS loadings are substantially less than the permitted value of 116 lbs/day. However, a discharge of 1.4 MGD is consistent with the 99<sup>th</sup> percentile value of the reported maximum daily flow values between January 2008 and March 2015 based on calculations performed by EPA for this permit issuance. EPA believes that a flow of 1.4 MGD is the appropriate value for calculating the maximum daily mass-based TSS limit.

EPA has carried forward the current permit limits of 10 mg/l and 116 lbs/day in the Draft Permit in accordance with antibacksliding regulations at 40 C.F.R. § 122.44(l)(1). The Draft Permit continues to require a frequency of twice quarterly composite monitoring at Outfall 001.

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<sup>2</sup> Maximum Daily TSS = 1.4 MGD \* 10 mg/L \* 8.3379 (conversion factor) = 116 lbs/day

#### **5.1.4 pH**

Massachusetts Surface Water Quality Standards for Class SA waters at 314 C.M.R. § 4.05(4)(a)(3) require a pH in the range of 6.5 to 8.5 standard units (s.u.) and not more than 0.2 standard units outside of the natural background range. According to DMR data from January 2008 through March 2015, the pH at SSFH ranged from 6.56 to 6.93 s.u. (see Attachment C).

Part I.A.3 of the 2007 permit states that “[t]he pH of the effluent shall not be less than 6.5 nor greater than 8.3 standard units at any time,” which is consistent with the water quality standards for Class SB waters at 314 C.M.R. § 4.05(3)(b)(3), not with the standards for Class SA waters, stated above, that would apply to Dock Creek. The Fact Sheet for the 2007 permit (p. 7) correctly states “[t]he limits, within the range of 6.5 through 8.5 std units, are based on the state water quality standards.” In addition, Part I.A.1.b of the 2002 permit required that the pH of the effluent be in the range of 6.5 to 8.5 s.u., consistent with the water quality standards for Class SA waters. Based on the 2007 fact sheet and 2002 permit, EPA concludes that the current permitted pH range of 6.5 to 8.3 s.u. was a typographical error and the applicable water quality standard of 6.5 to 8.5 s.u. is the appropriate pH limit for this facility. Thus, the Draft Permit includes a water quality-based limit for pH within the range consistent with Class SA waters. Although the Draft Permit limit is slightly less stringent than the currently permitted range of 6.5 to 8.3 s.u., EPA believes the Draft Permit limit is consistent with the exception to antibacksliding regulations at 40 C.F.R. § 122.44(l)(2)(i)(C) allowing for a technical mistake.

#### **5.1.5 Nutrients**

Discharges from CAAP operations like SSFH typically contain organic and inorganic solids, nutrients, and chemicals used in the prevention and treatment of various diseases. Any of these constituents could impair the water quality in the receiving water. Dissolved and particulate solids in the discharge result from fish feces and uneaten food particles. Nutrients, such as phosphorus and nitrogen, are associated with these solids. The presence of nutrients can result in excessive growth of any or all of the three main algae types: phytoplankton (floating freely in water column), periphyton (attached to aquatic vegetation or other structures) and benthic (attached to bottom sediments). The decay of organic solids resulting from excessive concentrations of solids and nutrients can cause low levels of dissolved oxygen in the receiving water. Massachusetts Surface Water Quality Standards at 314 C.M.R. 4.05(5)(c) state:

Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 C.M.R. 4.00. Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses. Human activities that result in the nonpoint source discharge of nutrients to any surface water may be required to be provided with cost effective and reasonable best management practices for nonpoint source control.

To assess the concentration of nutrients in the fish hatchery effluent, the current permit requires twice quarterly reporting of maximum daily total nitrogen, maximum daily total phosphorus, maximum daily total ammonia (as N) limit of 10 mg/l, and average monthly total ammonia (as N) limit of 6 mg/l.

### *Ammonia*

In receiving waters, oxidation of ammonia by nitrifying bacteria can deplete oxygen concentrations and impact aquatic life. At elevated concentrations, ammonia can be toxic to aquatic life. The current, water quality-based numeric limits for ammonia (6 mg/l average monthly limit and 10 mg/l maximum daily limit) were carried forward from the 2002 permit. These limits are consistent with 1989 Ambient Water Quality Criteria for Ammonia (saltwater) referenced in EPA's current Nationally Recommended Water Quality Criteria based on an average pH of 7.0 and maximum anticipated temperature of 25 degrees Celsius. A dilution factor of 1 is used because there is no available dilution in Dock Creek.

The maximum daily concentration of ammonia ranged from 0.14 mg/l to 1.07 mg/l with a long-term average of 0.41 mg/l, which is consistently well below even the current average monthly permit limit of 6 mg/l. Based on more than 7 years of twice quarterly monitoring data, EPA calculated the maximum total ammonia concentration equal to the 99<sup>th</sup> percentile of effluent data from January 2008 to March 2015 is 1.4 mg/l without dilution. Limited monitoring of the receiving water upstream of the outfall location in support of this Draft Permit suggests that the in-stream ammonia concentration is low (0.025 to 0.035 mg/l). EPA was unable to calculate a downstream concentration of ammonia because the flow of the unnamed tributary that serves as the receiving water prior to combining with Dock Creek (approximately 2,000 ft downstream of the hatchery) is unknown. Still, given the low in-stream ammonia concentration and the low effluent concentration relative to the water quality standard for ammonia toxicity, EPA concludes that the discharge of ammonia from the SSFH does not have a reasonable potential to cause or contribute to toxicity.

Based on this new information (including data reported in the DMR and in-stream monitoring data) and consistent with antibacksliding provisions at 40 CFR §122.44(l)(2)(i)(B)(I), EPA has determined that neither the average monthly nor the maximum daily limit for total ammonia from the current permit is necessary to ensure protection from chronic or acute ammonia toxicity. EPA believes that had this monitoring data been available at the time the permit limit was established, EPA would have been justified in not including the water quality-based numeric limitation for ammonia toxicity. The current permit limit states that the numeric ammonia limit is based on protecting in-stream dissolved oxygen levels. Ammonia is easily converted to nitrate, which can increase growth of algae, which in turn, depletes dissolved oxygen. Issues related to nitrification of ammonia are likely to be highest during the summer when higher temperatures encourage growth of nitrifying bacteria. In this case, in-stream dissolved oxygen levels are better protected by directly monitoring in-stream dissolved oxygen levels during the summer. Therefore, in place of the numeric ammonia limits (which were calculated to ensure protection from toxicity, and does not appear to be related to dissolved oxygen levels), the Draft Permit includes a maximum daily limit for in-stream dissolved oxygen that applies from May 1 through September 30 (see section entitled "In-stream Dissolved Oxygen" below).

### *Total Nitrogen*

Excessive nitrogen originating primarily from on-site wastewater disposal has led to decreases in the water quality of coastal rivers, ponds, and harbors in many communities on Cape Cod. The single largest contributor of nitrogen loads on Cape Cod is individual subsurface water disposal (septic) systems, primarily serving individual residences. The decline in water quality can result in loss of eelgrass beds, increases in macroalgal abundance, periodic extreme decreases in dissolved oxygen, reductions in aquatic diversity of benthic animal populations, and periodic algal blooms. Independently and in combination, these issues can threaten aquatic life. A Total Maximum Daily Load (TMDL) for Nitrogen has been developed for many of the watersheds on Cape Cod in an effort to properly manage nitrogen inputs. However, a TMDL for Nitrogen in the Sandwich Harbor/Scorton Creek watershed, which includes the hatchery, has not been developed at this time.

Uneaten feed, dissolved ammonia excretions, and waste solids are the primary sources of added nitrogen in the effluent from the SSFH. EPA has established above that the facility's ammonia concentrations are low, which leaves the discharge of solids as the primary source of nutrients in the effluent. The facility's implementation of best management practices (BMPs) to control solids by optimizing feed ratios, using floating feed to reduce waste, and using quiescent zones and settling areas work in combination to minimize the discharge of solids. These BMPs are, and continue to be the primary methods to control nitrogen loading at the SSFH. These methods are consistent with the best management practices set for larger hatcheries in the ELGs for CAAP facilities. *See* 69 Fed. Reg. 51908 (August 23, 2004) ("Solids control operational measures such as feed management and the requirement to focus on the proper operation of existing solids control structures are expected to achieve reductions in the TSS concentrations and at the same time reduce the TSS loadings being discharged"). EPA believes that these practices will continue to minimize the contribution of nitrogen from the SSFH to the receiving water.

EPA considered the nitrogen load from the hatchery with respect to the continued efforts to reduce nitrogen loading on Cape Cod. The current permit's reporting of total nitrogen enables EPA to estimate total nutrient loadings to the watershed. The maximum daily total nitrogen concentration from twice quarterly monitoring from February 2008 through May 2015 was used to determine the facility's baseline nitrogen load. EPA evaluated the estimated nitrogen loading based on current average concentration of total nitrogen during this period and the average monthly effluent flow. Using this data, the Facility's nitrogen mass load is as follows:

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Mass Loading (lbs/day) = Average N Concentration (mg/L)\*Flow (MGD)\*8.34 (conversion factor)

Therefore: Mass Loading = (1.6 mg/L)\*(1.0 MGD)\*(8.34) = **13.3 lbs/day**

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These loadings indicate that the Facility will contribute, on average, less than 14 lbs/day (6.4 kilograms per day) of nitrogen to Dock Creek if future concentrations are similar to current quarterly concentrations. Notably, the effluent from the hatchery may contribute, on average, 14 lbs/day to Dock Creek, but not all of the nitrogen in the effluent has been added by the hatchery. The source water for the hatchery is primarily from four groundwater wells with a minor contribution from artesian wells on the property. Both the groundwater and artesian wells likely contain nitrogen prior

to use in the hatchery, including contributions from on-site wastewater disposal (septic) systems in the watershed. To best understand the contribution nitrogen resulting from hatchery operations, EPA recommends that SSFH monitor total nitrogen in the source water at the hatchery.

The Draft Permit requires the Facility to maintain the current average mass effluent load of total nitrogen (*i.e.*, 14 lbs/day), and monitor total nitrogen twice per quarter. Compliance with the baseline load will be calculated as an annual rolling average using the current reporting period maximum daily value and previous three reported quarterly maximum daily values for Total Nitrogen (in pounds per day) and the annual average flow calculated using the maximum daily flow from the current reporting period and previous eleven months. In addition, the Draft Permit requires twice quarterly monitoring of the hatchery source water prior to use in hatchery operations. This monitoring must be conducted concurrent with the twice quarterly effluent monitoring. EPA believes that limiting the annual average nitrogen load from the facility, in combination with BMPs to control the discharge of solids, is the best approach to controlling the discharge of nitrogen from the facility.

In the event that a TMDL is released that requires action on the part of the permittee, or if nitrogen monitoring data or other new information indicate the need for additional nitrogen limitations, the permit may be modified pursuant to 40 C.F.R. § 122.62.

### *Total Phosphorus*

Fish hatcheries, such as the SSFH, have the potential to contribute phosphorus to the receiving water. State water quality standards require any point source discharge containing nutrients in concentrations that encourage eutrophication or growth of weeds or algae be provided with the highest and best practicable treatment to remove such nutrients. Phosphorus and other nutrients can promote the growth of nuisance algae and aquatic plants. When these plants and algae undergo their decay processes, they generate strong odors, depress dissolved oxygen levels in the river, and impair benthic habitat. In coastal embayments like Dock Creek, nitrogen is the critical determinant of habitat quality and is typically associated with higher phytoplankton production, increased organic matter, and low dissolved oxygen.<sup>3</sup> Still, phosphorus may play a role in the growth of nuisance algae and plants.

The current permit requires report maximum daily total phosphorus twice per quarter. According to data reported from January 2008 to March 2015, the maximum daily total phosphorus concentration ranged from 0.05 to 0.44 mg/l with an average concentration of 0.18 mg/l (see Attachment C). The Draft Permit continues the requirement for reporting maximum daily total phosphorus concentrations based on twice quarterly monitoring.

#### **5.1.6 In-stream Dissolved Oxygen**

The Draft Permit requires seasonal monitoring and reporting of the minimum daily in-stream dissolved oxygen (DO) level. The Massachusetts Surface Water Quality standards at 314 C.M.R. 4.05(4)(a)(1) states that, in Class SA waters, dissolved oxygen “shall not be less than 6.0 mg/l. Where background conditions are lower, DO shall not be less than natural background. Natural seasonal and daily variations that are necessary to protect existing and designated uses shall be maintained.” The

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<sup>3</sup> See, for example, the Massachusetts Estuaries Project. July 2003. *Site Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators Interim Report*.

current permit includes a limit for ammonia, which, according to the Fact Sheet, was carried forward from the previous permit and is based on protecting in-stream dissolved oxygen levels. However, the previous permit's Fact Sheet (2001) states that the numeric limit is based on the water quality criteria for ammonia toxicity in saltwater systems (see discussion in section entitled "Nutrients," above). Since there is no reasonable potential to cause or contribute to ammonia toxicity at the hatchery, EPA has eliminated the ammonia limit in the Draft Permit. Dissolved oxygen, on the other hand, is an indicator of nutrient (including nitrogen) over-enrichment and eutrophication. Seasonal monitoring of in-stream DO levels is intended to supplement nutrient monitoring to ensure the protection of the designated uses of Dock Creek, including as excellent habitat for aquatic life.

The numeric limit for in-stream dissolved oxygen was added to the Draft Permit to ensure that water quality standards are met and that in-stream dissolved oxygen levels are protective of aquatic life. Monitoring is required from May 1 through September 30, when ambient temperatures are likely to be at a maximum and growth of nitrifying bacteria, which can deplete oxygen levels, would be highest. The permittee is required to monitor in-stream DO levels once per month during the summer.

#### **5.1.7 Hydrogen Peroxide**

The facility may use 35% PEROX-AID® (hydrogen peroxide solution) as an external microbicide for the control of mortality in freshwater-reared finfish eggs due to saprolegniasis, in freshwater-reared salmonoids due to bacterial gill disease (*Flavobacterium branchiophilum*), and in freshwater-reared cool water finfish due to external columnaris disease (*Flavobacterium columnae*). PEROX-AID® is an FDA-approved drug for freshwater-reared finfish, and its use must adhere to FDA label instructions.

The Massachusetts Water Quality Standards do not include aquatic toxicity criteria for hydrogen peroxide, but according to the *Environmental Assessment for the Use of Hydrogen Peroxide in Aquaculture for Treating External Fungal and Bacterial Diseases of Culture Fish and Fish Eggs* (United State Geological Survey, 2006, p.72), "the use of hydrogen peroxide as a waterborne therapeutant in intensive and extensive freshwater aquaculture operations constitutes no significant threat to the environment, the populations of organisms residing there, or public health and safety if receiving water concentrations do not exceed 0.7 mg/l on a short-term basis." This acute water quality "benchmark" was determined using EPA guidance for deriving water quality criteria and is intended to serve as a guide to determine effluent discharge limits in NPDES permitting.

PEROX-AID® has not been used in at least two permit terms, but because the facility is authorized for its use when circumstances dictate, the Draft Permit includes a maximum daily effluent limit of 0.7 mg/l to ensure that concentrations in the receiving water remain below the acute water quality benchmark. Monitoring of hydrogen peroxide is required once per event when PEROX-AID® is used at the facility.

#### **5.1.8 Use of Formalin**

CAAP facilities commonly use biocides, the most common of which are formalin products such as Paracide-F, Formalin-F or Parasite-S, which contain approximately 37 % by weight of formaldehyde gas. Formalin is used for the therapeutic treatment of fungal infections on the eggs of finfish and to control certain external protozoa and monogenetic trematodes on all finfish species. Because it is

formulated to selectively kill or remove certain attached organisms, but not the finfish themselves when properly applied, formalin is more toxic to invertebrate species than to vertebrates. 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 invertebrate species because they are more sensitive to the effects of formaldehyde. In the receiving waters, these invertebrates are an integral part of the food chain for finfish.

Formalin use must be consistent with U.S. Food and Drug Administration (FDA) labeling instructions as per 21 C.F.R. § 529.1030. While the prophylactic use of formalin (*i.e.*, drugs and chemicals used to prevent specific disease(s) in the absence of their symptoms) is not mentioned in those FDA regulations, EPA allows its use only under the extra-label provisions of the Federal Food, Drug and Cosmetic Act as a Best Management Practice (BMP) to control the excessive use of drugs. Formalin has not been used at the SSFH in at least two permit cycles. However, in the event that application of formalin is necessary, the facility's current Best Management Plan (June 2008) dictates that it be used in strict compliance with FDA recommended dosages and raceways are treated individually. Water volume in the treated raceway is reduced to the minimum possible by lowering the dam boards.

Formalin was not used during the course of the present permit. The hatchery has asked that the current permit limits be retained to allow for emergency use of formalin. Consistent with antibacksliding provisions found in 40 C.F.R. § 122.44(1), the Draft Permit carries forward the numeric limits for formaldehyde and dissolved oxygen, as well as the acute whole effluent toxicity limit ( $LC50 \geq 100\%$ ). According to the Fact Sheet, the current permit limits were included to provide assurance that there is no unacceptable toxicity in the discharge during periods when formalin is being used. However, the Draft Permit has eliminated the chronic whole effluent toxicity limitation ( $C-NOEC \geq 100\%$ ). Chronic limits are designed to protect against the long-term effects of a pollutant. In this case, formalin has not been used in more than 10 years, and, in the event that formalin was necessary to protect fish from disease, use of the drug would be restricted as directed by the BMP Plan and consistent with the FDA instructions described above, and the subsequent discharge of effluent treated with formalin would be extremely limited. As such, EPA does not expect any long-term effects from the rare and limited use of formalin at the hatchery. This new information about the rare and limited use of formalin at the hatchery is consistent with the antibacksliding provisions at 40 C.F.R. § 122.44(l)(2)(i)(B)(I) and would have justified in not including a chronic WET limit at the time of permit issuance.

The maximum daily formaldehyde limit of 0.74 mg/l was based on MassDEP's review of available aquatic life toxicity information pertaining to formaldehyde during issuance of the 2002 NPDES permit for this facility. The dissolved oxygen limit is consistent with the Massachusetts Surface Water Quality standards at 314 C.M.R. 4.05(4)(a)(1) states that, in Class SA waters, dissolved oxygen "shall not be less than 6.0 mg/l. Where background conditions are lower, DO shall not be less than natural background. Natural seasonal and daily variations that are necessary to protect existing and designated uses shall be maintained." All permit limits were calculated using zero available dilution.

In the current permit, all limits and monitoring related to the use of formalin apply "when-in-use," since formalin is not typically used at the hatchery, although monitoring is only required quarterly during formalin use. This monitoring frequency may not adequately capture a representative sample

of the effluent during the use of formalin. Recently issued NPDES permits for fish hatcheries using formalin have required more frequent monitoring when the drug is in use (see, for example, final permits for Montague State Fish Hatchery MA0110051, Milford State Fish Hatchery NH0110001, and Powder Mill State Fish Hatchery NH0000710). Increased monitoring is warranted at the SSFH because flow varies with the natural springs, thus two treatment events even in the same quarter may not have the same effluent concentration, and because there is no available dilution in the Dock Creek. The Draft Permit carries forward the numeric limits for formaldehyde, dissolved oxygen, and WET testing from the current permit consistent with antibacksliding requirements, but has increased monitoring frequency from quarterly (when in use) to once during each event in which fish are treated with formalin.

### 5.1.9 Best Management Practices

The ELGs contained in 40 C.F.R. § 451.11 are narrative limitations that describe BMPs to which those CAAP facilities that produce more than 100,000 pounds of fish per year must adhere. During development of the ELGs, EPA determined, based on examination of hatchery data, that a combination of settling technology and feed management control practices will achieve low levels of TSS in hatchery effluent. These BMPs require the permittee to develop and employ methods for feed management, removal of accumulated solids, storage of drugs and pesticides, spill prevention, management of the wastewater treatment system, maintaining accurate records, and ensuring that all personnel receive proper training. The SSFH is not subject to ELGs for CAAP facilities because it does not produce more than 100,000 pounds of fish annually. However, the current permit requires BMPs consistent with the ELGs, and Part I.B. of the Draft Permit carries forward these requirements.

## 6.0 ESSENTIAL FISH HABITAT

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

Essential fish habitat is only designated for species for which federal fisheries management plans exist [16 U.S.C. § 1855(b)(1)(A)]. EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The SSFH discharges into Dock Creek, which flows through tidal marshes and into Cape Cod Bay. The tidal marshes and Cape Cod Bay are designated by NMFS as EFH for the following species and applicable life stages:

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod ( <i>Gadus morhua</i> )	X	X	X	X

haddock ( <i>Melanogrammus aeglefinus</i> )	X	X		
pollock ( <i>Pollachius virens</i> )		X	X	X
whiting ( <i>Merluccius bilinearis</i> )	X	X	X	X
red hake ( <i>Urophycis chuss</i> )	X	X	X	X
white hake ( <i>Urophycis tenuis</i> )	X	X	X	X
winter flounder ( <i>Pseudopleuronectes americanus</i> )	X	X	X	X
yellowtail flounder ( <i>Limanda ferruginea</i> )	X	X	X	X
windowpane flounder ( <i>Scophthalmus aquosus</i> )	X	X	X	X
American plaice ( <i>Hippoglossoides platessoides</i> )	X	X	X	X
ocean pout ( <i>Macrozoarces americanus</i> )	X	X	X	X
Atlantic halibut ( <i>Hippoglossus hippoglossus</i> )	X	X	X	X
Atlantic sea scallop ( <i>Placopecten magellanicus</i> )	X	X	X	X
Atlantic sea herring ( <i>Clupea harengus</i> )	X	X	X	X
monkfish ( <i>Lophius americanus</i> )	X	X		
bluefish ( <i>Pomatomus saltatrix</i> )			X	X
long finned squid ( <i>Loligo pealeii</i> )	n/a	n/a	X	X
short finned squid ( <i>Illex illecebrosus</i> )	n/a	n/a	X	X
Atlantic butterfish ( <i>Peprilus triacanthus</i> )	X	X	X	X
Atlantic mackerel ( <i>Scomber scombrus</i> )	X	X	X	X
summer flounder ( <i>Paralichthys dentatus</i> )				X
scup ( <i>Stenotomus chrysops</i> )	n/a	n/a	X	X
black sea bass ( <i>Centropristis striata</i> )	n/a		X	X
spiny dogfish ( <i>Squalus acanthias</i> )	n/a	n/a	X	X
bluefin tuna ( <i>Thunnus thynnus</i> )			X	X

EPA has concluded that the limits and conditions in the Draft Permit minimize adverse effects to EFH for the following reasons:

- Numeric limitations on total suspended solids and biochemical oxygen demand
- Implementation of best management practices to optimize feed ratios and minimize input of nitrogen and phosphorus
- Strict protocols and standards to minimize the need for chemotherapeutic agents and medications as well as specific limitations that apply during the use of formalin

EPA has determined that the Draft Permit limits adequately protect EFH species, and therefore additional mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for our conclusion, NMFS will be notified and an EFH consultation will be initiated.

## **7.0 ENDANGERED SPECIES ACT**

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Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish.

The hatchery's discharge is comprised of treated fish culture water from the outdoor. The effluent is maintained at high quality to support the rearing of trout and settled solids are not discharged, but removed with a vacuum and discharged on land at one of three on-site solids management areas.

EPA has made the preliminary determination that two endangered species under the jurisdiction of the USFWS and NMFS: the piping plover (*Charadrius melodus*) and the North Atlantic right whale (*Eubalaena glacialis*), may occur in the town of Sandwich. However, neither species is likely to occur in the vicinity of the hatchery discharge nor are these species likely to be affected by the effluent. Piping plover favor wide, sparsely vegetated barrier beaches and right whales are found in Cape Cod Bay. In contrast, the hatchery outfall is located in a wooded area and the receiving water travels more than 1.5 miles, first joining Dock Creek, then combining with waters from Old Harbor and Mill Creeks, before finally entering Cape Cod Bay. It is EPA's opinion that the operation of this facility, as governed by the permit action, is not likely to adversely affect these species.

Further, limitations and conditions contained in the Draft Permit are expected to minimize any potential adverse impacts of the hatchery effluent to piping plover or to North Atlantic right whales in Cape Cod Bay. The Draft Permit carries forward numeric limitations on total suspended solids (TSS) (maximum daily limit of 10 mg/L) and biochemical oxygen demand (BOD<sub>5</sub>) (maximum daily limit of 5 mg/L) from the current permit and the facility consistently observes TSS and BOD<sub>5</sub> effluent concentrations well under the permitted limitations (see Attachment C for reported discharge monitoring data). The Draft Permit continues to require BMPs to optimize feed ratios, which ensures that nutrient loads are minimized. The SSFH uses floating feed, which facilitates proper management

and reduces waste. The Draft Permit requires the hatchery to hold the current nitrogen load. Finally, the hatchery's use of chemotherapeutic agents and medications is limited to those approved by the FDA and ensures that any drugs are used in accordance with FDA recommendations. The Draft Permit includes limitations on formaldehyde and dissolved oxygen when formalin is used and limitations on hydrogen peroxide when PEROX-AID® is used. In addition, the hatchery maintains strict biosecurity procedures and standards in accordance with the New England Salmonid Health Guidelines to limit the chance that disease or parasitic infections will occur. The hatchery has not used formalin or PEROX-AID® in at least the past two permit cycles.

Based on the relevant information examined, EPA finds that the renewal of the Sandwich State Fish Hatchery's NPDES permit is not likely to adversely affect endangered species and no consultation is necessary at this time. If adverse effects do occur as a result of this permit action, or if new information becomes available that changes the basis for this determination, EPA will notify NMFS and the USFWS and initiate consultation.

## **8.0 MONITORING AND REPORTING**

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The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide ongoing, representative information on the levels of regulated constituents in the effluent. The approved analytical procedures are found in 40 CFR § 136 unless otherwise explicitly required in the permit.

The Draft Permit requires the permittee to continue to electronically report monitoring results obtained during each calendar month as Discharge Monitoring Report (DMRs) to EPA and the state using NetDMR no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool for regulated CWA permittees to submit DMRs electronically via a secure internet application to U.S. EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR § 122.41 and § 403.12. NetDMR is accessed from the following url:

<http://www.epa.gov/netdmr>. Further information about NetDMR can be found on the EPA Region 1 NetDMR website located at <http://www.epa.gov/region1/npdes/netdmr/index.html>.

In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Permit Conditions. With the use of NetDMR to report DMRs and reports, the permittee is no longer be required to submit hard copies of DMRs or other reports to EPA and is no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP. State reporting requirements are further explained in the Draft Permit.

## **9.0 STATE CERTIFICATION REQUIREMENTS**

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EPA may not issue a permit unless the MassDEP either certifies that the effluent limitations contained in this 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 such certification. EPA has requested that MassDEP certify the permit. Under Section 401 of the CWA, EPA is required to obtain certification from the state in which the discharge is located which determines that all water quality standards, in accordance with Section 301(b)(1)(C) of the CWA, will be satisfied. Regulations governing state certification are set forth in 40 CFR §124.53 and §124.55. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.44(d). The staff of the MassDEP has reviewed the Draft Permit. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

## **10.0 COMMENT PERIOD, HEARING REQUESTS, AND PROCEDURES FOR FINAL DECISIONS**

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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 the U.S. EPA, Office of Ecosystem Protection, Attn: Danielle Gaito, 5 Post Office Square, Suite 100 (OEP06-4), Boston, Massachusetts 02109-3912 or via email to [gaito.danielle@epa.gov](mailto:gaito.danielle@epa.gov). Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

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

## **11.0 EPA AND MASSDEP CONTACTS**

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

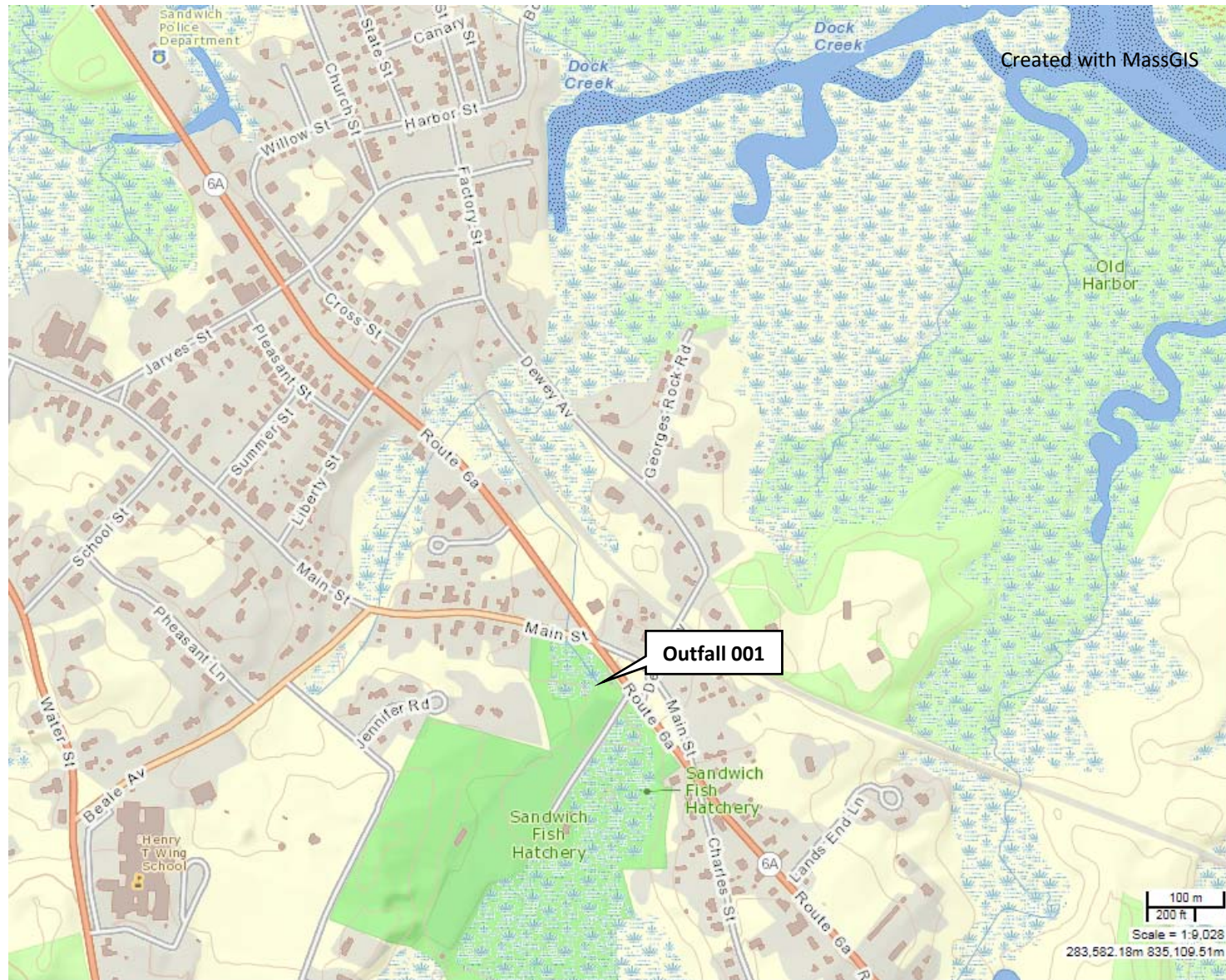
Danielle Gaito  
EPA Office of Ecosystem Protection  
5 Post Office Square, Suite 100 (OEP06-4)  
Boston, MA 02109-3912  
Tel: (617) 918-1297  
email: [gaito.danielle@epa.gov](mailto:gaito.danielle@epa.gov)

Jennifer Wood  
Massachusetts Department of Environmental Protection  
Surface Water Permitting Program  
1 Winter Street  
Boston, MA 02108  
Tel: (617) 348-4026  
catherine.vakalopoulos@state.ma.us

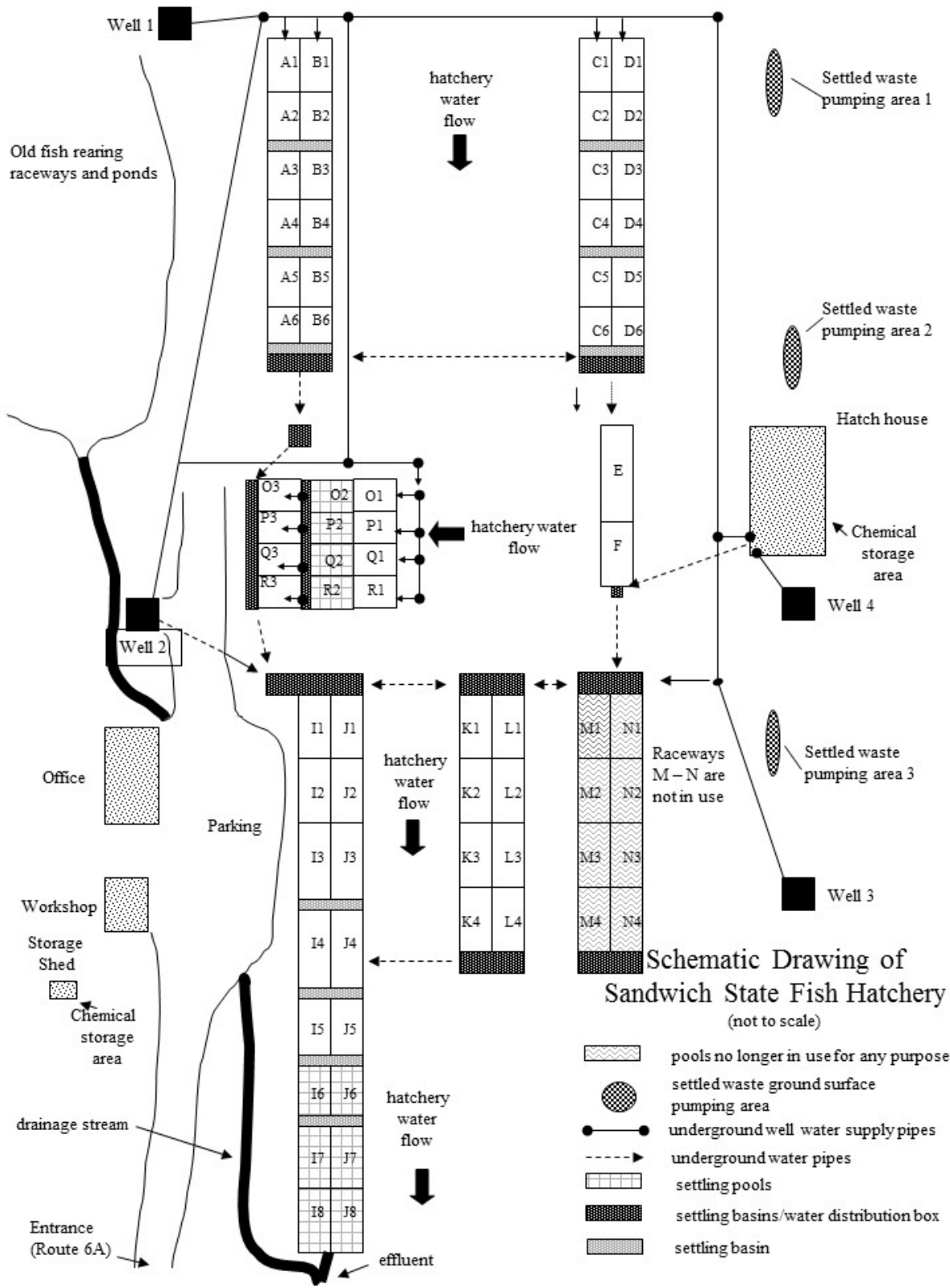
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**Ken Moraff, Director**  
**Office of Ecosystem Protection**  
**U.S. Environmental Protection Agency**

### Attachment A: Site Location



Attachment B: Flow Diagram



### Attachment C Discharge Monitoring Report Summary

Sandwich State Fish Hatchery

DMR Summary

October 2007 to June 2013

Parameter	Frequency	Units	Min	Max	Average	Permit Limit
Flow	DAILY MX	MGD	0.89	1.59	1.10	---
	MO AVG	MGD	0.80	1.17	0.99	---
pH	RANGE	SU	6.56	6.93	---	6.5-8.3
BOD, 5-day, 20 deg. C	DAILY MX	lb/d	17.96	41.90	27.18	58
		mg/L	2.06	4.8	3.34	5
Solids, total suspended	DAILY MX	lb/d	3.99	49.00	19.17	116
		mg/L	0.14	5.4	2.29	10
Nitrogen, ammonia total (as N)	DAILY MX	mg/L	0.14	1.07	0.41	6
	MO AVG	mg/L	0.14	1.07	0.48	10
Nitrogen, total	DAILY MX	mg/L	0.71	3.00	1.6	---
Phosphorus	DAILY MX	mg/L	0.05	0.44	0.18	---

Sandwich State Fish Hatchery

Monthly DMR Data

January 2008 to April 2015

DATE	FLOW		pH		DATE	FLOW		pH	
	MGD	MGD	S.U.	S.U.		MGD	MGD	S.U.	S.U.
	DAILY MX	MO AVG	MIN	MAX		DAILY MX	MO AVG	MIN	MAX
1/31/2008	1.24	1.12	6.68	6.68	9/30/2011	1.43	0.99	6.72	6.72
2/29/2008	1.21	1.15	6.83	6.83	10/31/2011	1.08	0.84 <sup>A</sup>	6.74	6.74
3/31/2008	1.59	1.17	6.65	6.65	11/30/2011	1.08	0.81	6.74	6.74
4/30/2008	1.26	1.13	6.72	6.72	12/31/2011	1.04	0.83	6.75	6.75
5/31/2008	1.22	1.11	6.89	6.89	1/31/2012	1.04	0.99	6.75	6.75
6/30/2008	1.13	0.96	6.89	6.89	2/29/2012	1.04	1.00	6.77	6.77
7/31/2008	1.11	1.02	6.87	6.87	3/31/2012	1.02	0.98	6.76	6.76
8/31/2008	1.22	1.07	6.85	6.85	4/30/2012	1.02	0.98	6.80	6.80
9/30/2008	1.15	1.07	6.79	6.79	5/31/2012	1.09	0.98	6.81	6.81
10/31/2008	1.07	1.04	6.89	6.89	6/30/2012	1.02	0.95	6.73	6.73
11/30/2008	1.05	0.86	6.75	6.75	7/31/2012	1.03	0.93	6.79	6.79
12/31/2008	1.05	0.98	6.85	6.85	8/31/2012	1.04	0.94	6.76	6.76
1/31/2009	1.11	1.02	6.71	6.71	9/30/2012	1.03	0.93	6.84	6.84
2/28/2009	1.10	1.04	6.79	6.79	10/31/2012	0.99	0.94	6.85	6.85
3/31/2009	1.11	1.06	6.78	6.78	11/30/2012	1.06	0.92	6.83	6.83
4/30/2009	1.10	1.07	6.69	6.69	12/31/2012	1.04	0.94	6.79	6.79
5/31/2009	1.11	1.03	6.81	6.81	1/31/2013	1.07	0.95	6.85	6.85
6/30/2009	1.02	0.98	6.70	6.70	2/28/2013	1.14	0.96	6.75	6.75
7/31/2009	1.04	1.01	6.71	6.71	3/31/2013	1.05	0.94	6.77	6.77
8/31/2009	1.09	1.05	6.74	6.74	4/30/2013	0.99	0.96	6.80	6.80
9/30/2009	1.10	1.06	6.69	6.69	5/31/2013	0.97	0.89	6.74	6.74
10/31/2009	1.18	1.05	6.69	6.69	6/30/2013	0.89	0.80	6.78	6.78
11/30/2009	1.09	1.03	6.68	6.68	7/31/2013	0.95	0.84	6.56	6.56
12/31/2009	1.07	1.04	6.70	6.70	8/31/2013	0.91	0.88	6.93	6.93
1/31/2010	1.06	1.03	6.73	6.73	9/30/2013	0.91	0.88	6.70	6.70
2/28/2010	1.05	1.03	6.70	6.70	10/31/2013	0.89	0.87	6.77	6.77
3/31/2010	1.34	1.08	6.80	6.80	11/30/2013	0.97	0.89	6.76	6.76
4/30/2010	1.10	1.07	6.67	6.67	12/31/2013	1.05	0.90	6.72	6.72
5/31/2010	1.09	0.95	6.70	6.70	1/31/2014	1.03	0.92	6.81	6.81
6/30/2010	1.07	0.95	6.76	6.76	2/28/2014	0.97	0.92	6.78	6.78
7/31/2010	1.10	1.05	6.71	6.71	3/31/2014	1.24	0.92	6.85	6.85
8/31/2010	1.19	1.06	6.69	6.69	4/30/2014	1.05	0.93	6.86	6.86
9/30/2010	1.08	1.04	6.74	6.74	5/31/2014	1.05	0.90	6.78	6.78
10/31/2010	1.13	1.06	6.71	6.71	6/30/2014	1.12	0.98	6.57	6.57

DATE	FLOW		pH		DATE	FLOW		pH	
	MGD	MGD	S.U.	S.U.		MGD	MGD	S.U.	S.U.
	DAILY MX	MO AVG	MIN	MAX		DAILY MX	MO AVG	MIN	MAX
11/30/2010	1.29	1.06	6.76	6.76	7/31/2014	1.12	1.03	6.78	6.78
12/31/2010	1.10	1.06	6.74	6.74	8/31/2014	1.15	1.04	6.85	6.85
1/31/2011	1.07	1.04	6.74	6.74	9/30/2014	1.06	1.03	6.71	6.71
2/28/2011	1.13	1.05	6.76	6.76	10/31/2014	1.26	1.05	6.86	6.86
3/31/2011	1.07	1.05	6.78	6.78	11/30/2014	1.18	1.06	6.77	6.77
4/30/2011	1.12	1.06	6.71	6.71	12/31/2014	1.23	1.07	6.81	6.81
5/31/2011	1.10	1.01	6.67	6.67	1/31/2015	1.24	1.07	6.75	6.75
6/30/2011	1.38	0.98	6.78	6.78	2/28/2015	1.15	1.08	6.76	6.76
7/31/2011	1.12	0.97	6.72	6.72	3/31/2015	1.11	1.07	6.65	6.65
8/31/2011	1.17	0.98	6.84	6.84	4/30/15	1.09	1.18	6.74	6.74

<sup>A</sup> Corrected Flow Value for October 2011 – Average monthly value incorrectly reported in ISIS and ECHO as 8.38 MGD. EPA confirmed with facility that a typographical error was made and present the corrected reported value of 0.84 MGD.

Sandwich State Fish Hatchery

Quarterly DMR Data

January 2008 to May 2015

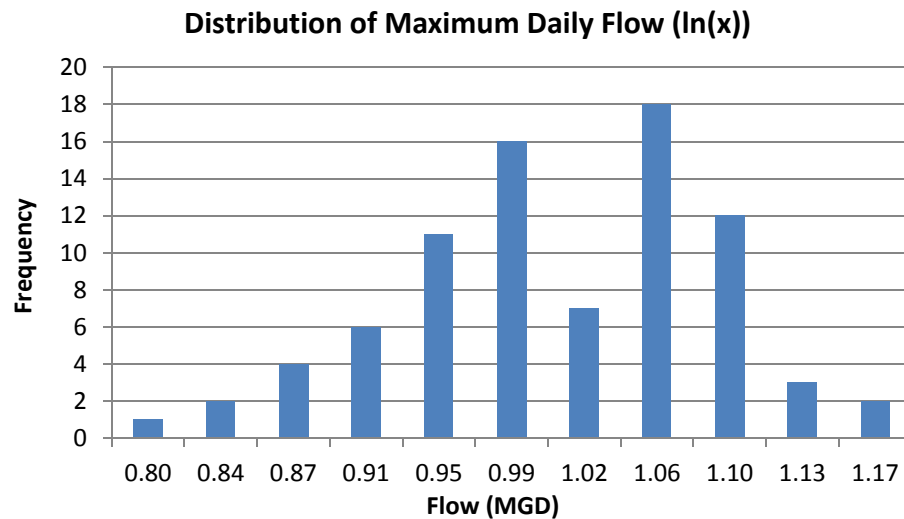
DATE	BOD <sub>5</sub>		TSS		AMMONIA (N)		TOTAL N	TOTAL P
	58 lb/d	5 mg/l	110 lb/d	10 mg/l	10 mg/l	6 mg/l	mg/l	mg/l
	DAILY MAX	DAILY MAX	DAILY MAX	DAILY MAX	DAILY MAX	MO AVG	DAILY MAX	DAILY MAX
2/29/2008	29.93	3.24	3.99	0.40	1.07	1.07	1.81	0.44
5/31/2008	33.92	3.61	14.97	1.60	0.24	0.24	0.71	0.14
8/31/2008	21.95	2.62	16.96	1.40	0.20	0.20	0.80	0.15
11/30/2008	24.94	2.95	6.98	0.80	0.36	0.36	0.87	0.11
2/28/2009	28.93	3.27	17.96	2.00	0.39	0.39	0.79	0.25
5/31/2009	20.95	2.38	24.94	2.80	0.25	0.25	0.98	0.12
8/31/2009	24.94	3.08	15.96	2.00	0.29	0.29	0.92	0.17
11/30/2009	19.95	4.48	13.97	2.00	0.49	0.20	2.00	0.19
2/28/2010	23.95	2.73	31.93	3.60	0.30	0.30	1.00	0.12
5/31/2010	20.95	2.30	17.96	2.00	0.38	0.38	1.00	0.13
8/31/2010	17.96	2.44	31.93	4.40	0.14	0.14	1.30	0.05
11/30/2010	17.96	2.06	3.99	0.14	0.30	0.30	1.10	0.07
2/28/2011	24.94	2.80	10.98	1.20	0.56	0.56	1.20	0.15
5/31/2011	41.90	4.80	19.95	2.40	0.67	0.65	3.00	0.16
8/31/2011	20.95	2.79	23.95	3.20	0.15	0.15	1.10	0.08
11/30/2011	28.93	3.49	16.96	2.00	0.69	0.44	2.50	0.18
2/29/2012	30.93	3.71	16.96	2.00	0.59	0.44	1.10	0.16
5/31/2012	37.91	4.62	16.96	2.00	0.66	0.52	1.20	0.30
8/31/2012	32.93	4.17	21.95	2.80	0.42	0.41	2.40	0.15
11/30/2012	35.92	4.61	17.96	2.40	0.67	0.45	2.30	0.21
2/28/2013	27.94	3.56	8.98	1.20	0.53	0.48	1.91	0.19
5/31/2013	27.94	3.60	24.94	3.20	0.53	0.49	1.92	0.20
8/31/2013	17.96	2.63	19.95	2.80	0.46	0.41	1.87	0.17
11/30/2013	25.94	3.65	19.95	2.80	0.73	0.47	2.15	0.20
2/28/2014	30.93	4.14	23.95	3.20	0.55	0.48	2.29	0.21
5/31/2014	24.94	3.25	13.97	1.80	0.52	0.41	1.91	0.28
8/31/2014	21.00	2.49	20.00	2.40	0.35	0.34	1.47	0.14
11/30/2014	29.00	2.92	27.00	2.60	0.58	0.43	1.77	0.15
2/28/2015	34.00	3.79	49.00	5.40	0.75	0.54	2.30	0.18
5/31/2015	35.00	3.87	20.00	2.20	0.68	0.57	2.28	0.28

## Attachment D: Statistical Calculations

### Calculation of 99<sup>th</sup> Percentile Maximum Daily Flow

Statistical analysis of maximum daily flow data used in the development of BOD<sub>5</sub> and TSS effluent limitations (pages 9-10 of this fact sheet) follows the methods recommended in Appendix E of the *Technical Support Document for Water Quality-Based Toxic Control* (TSD) (EPA/505/2-90-001, March 1991). Natural logarithms (i.e., logarithms to the base e) are used based on the assumption that daily flow values are approximately lognormally distributed. An explanation of the basis for using the lognormal distribution for environmental data can be found in Appendix E of the TSD.

The distribution of the natural logarithms for maximum daily flow from January 2008 to March 2015 (n = 87 samples) is presented below.



From this dataset, EPA calculated the 99<sup>th</sup> percentile =  $\exp [\mu_y + 2.326 \cdot s_y]$

Where:

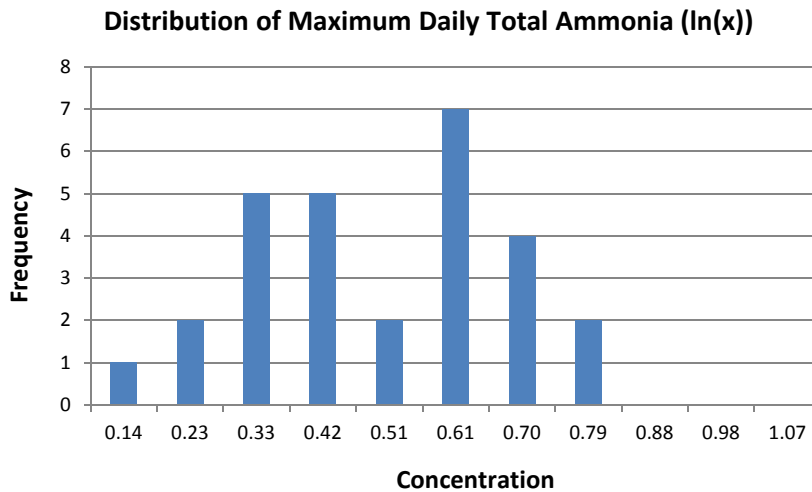
- $\mu_y$  = Average of Natural Log of daily flow values = 0.093
- $s_y$  = Standard Deviation of Natural Log of daily flow values = 0.097
- $z = 2.326 = z_{99}$  (the 99<sup>th</sup> percentage point) of the standard normal distribution

99<sup>th</sup> percentile daily max estimate =  $\exp[0.093 + (2.326 \cdot 0.08141)] = 1.4 \text{ MGD}$

### Calculation of 99<sup>th</sup> Percentile Maximum Daily Total Ammonia

EPA conducted a similar analysis to obtain the 99<sup>th</sup> percentile maximum daily estimate for total ammonia based on the maximum daily values reported from January 2008 to March 2015. In this case, EPA compared the 99<sup>th</sup> percentile maximum daily estimate to the numeric permit limit in the permit issued in 2007 to determine if there is reasonable potential to exceed the numeric limit (see discussion on page 12 of this fact sheet).

The distribution of the natural logarithms for maximum daily flow from January 2008 to March 2015 (n = 29 samples) is presented below.



From this dataset, EPA calculated the 99<sup>th</sup> percentile =  $\exp [\mu_y + 2.326*s_y]$

Where:  $\mu_y$  = Average of Natural Log of daily flow values = -0.85  
 $s_y$  = Standard Deviation of Natural Log of daily flow values = 0.49  
 $z = 2.326 = z_{99}$  (the 99<sup>th</sup> percentage point) of the standard normal distribution

$$\text{99}^{\text{th}} \text{ percentile daily max estimate} = \exp[-0.85 + (2.326*0.49)] = \mathbf{1.3 \text{ mg/L}}$$

EPA compared this maximum estimate to the maximum daily total ammonia limit of 10 mg/L and average monthly total ammonia limit of 6 mg/L determined there is no reasonable potential to exceed the water quality-based total ammonia limits from the permit issued in 2007.