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"),

New Hampshire Fish and Game Department

is authorized to discharge from a facility located at

Berlin State Fish Hatchery
York Pond Road
Berlin, New Hampshire

to receiving water named

No. 9 Brook, York Pond, Cold Brook and West Branch Upper Ammonoosuc River
(All in Hydrologic Basin Code: 801010701)

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

This permit shall become effective on the date of signature.

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

This permit supersedes the permit issued on July 1, 2005.

This permit consists of **21** pages in Part I including effluent limitations, monitoring and reporting requirements, and **25** pages in Part II including Standard Conditions and Definitions.

Signed this 20th day of February, 2013

/S/ SIGNATURE ON FILE

Kenneth Moraff, Acting Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency
Boston, Massachusetts

Part I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from **outfall serial number 004** overflow water and treated hatchery effluent from Flat Pond into Cold Brook. Such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Flow (MGD)	Report	---	1/Week	Flow Meter or weir calculation[1]
TSS	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
BOD_5	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
Total Phosphorus as P[3]	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
Total Nitrogen as N	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
pH Range[4]	6.0 to 8.0 standard units		1/Week	Grab
Fish Biomass on Hand[5], lbs	Report	---	Monthly	Calculation
Fish Feed Used, lbs	Report	---	Monthly	Calculation
Efficiency of Fish Feed Used[6], Percent	Report	---	Monthly	Calculation

PART I.A.1 (continued)

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Total Residual Chlorine[7] (when Chloramine-T in use), mg/l	0.011	0.019	1/Day	Grab
Hydrogen Peroxide (when in use), mg/l	---	0.7	1/Day	Grab
Dissolved Oxygen[8], mg/l	---	Report	1/Month (Formalin Absent)	Grab
Dissolved Oxygen Saturation[8], Percent	---	Report	1/Month (Formalin Absent)	Grab
Water Temperature[8], ˚F	---	Report	1/Month (Formalin Absent)	Grab
Formaldehyde[9], mg/l	1.6	4.6	1/Week (Formalin Present)	Grab
Dissolved Oxygen[9], mg/l	---	Report	1/Week (Formalin Present)	Grab

NOTE: See pages 10 through 11 for explanation of the various footnotes.

2. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from **outfall serial number 005** overflow water from "B" Canal (fish production) and "A" and "C" Canal (no fish production) into No. 9 Brook. Such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	**Discharge Limitations**		**Monitoring Requirements**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Flow (MGD)	Report	---	1/Week	Flow Meter or weir calculation[1]
TSS	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
BOD_5	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
Total Phosphorus as P[3]	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
Total Nitrogen as N	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
pH Range[4]	6.0 to 8.0 standard units		1/Week	Grab
Fish Biomass on Hand[5], lbs	Report	---	Monthly	Calculation
Fish Feed Used, lbs	Report	---	Monthly	Calculation
Efficiency of Fish Feed Used[6], Percent	Report	---	Monthly	Calculation

PART I.A.2 (continued)

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Total Residual Chlorine[7] (when Chloramine-T in use), mg/l	0.011	0.019	1/Day	Grab
Hydrogen Peroxide (when in use), mg/l	---	0.7	1/Day	Grab
Dissolved Oxygen[8], mg/l	---	Report	1/Month (Formalin Absent)	Grab
Dissolved Oxygen Saturation[8], Percent	---	Report	1/Month (Formalin Absent)	Grab
Water Temperature, ˚F	---	Report	1/Month (Formalin Absent)	Grab
Formaldehyde[9], mg/l	1.6	4.6	1/Week (Formalin Present)	Grab
Dissolved Oxygen[9], mg/l	---	Report	1/Week (Formalin Present)	Grab

NOTE: See pages 10 through 11 for explanation of the various footnotes.

3. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from **outfall serial number 007** raceway cleaning water to No Named Pond and Upper Trail Pond. The permittee is authorized to discharge pond water from Unnamed Pond and Upper Trail Pond to West Branch of the Upper Ammonoosuc River. Such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	**Discharge Limitations**		**Monitoring Requirements**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Flow (MGD)	Report	1.5	1/Week	Flow Meter or weir calculation[1]
TSS	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
BOD_5	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
Total Phosphorus as P[3]	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
Total Nitrogen as N	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab
pH Range[4]	6.0 to 8.0 standard units		1/Week	Grab
Total Residual Chlorine[7] (when Chloramine-T in use), mg/l	0.026	0.029	1/Day	Grab
Hydrogen Peroxide (when in use), mg/l	---	1.1	1/Day	Grab
Dissolved Oxygen[8], mg/l	---	Report	1/Month (Formalin Absent)	Grab

PART I.A.3 (continued)

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Average Monthly	**Maximum Daily**	**Measurement Frequency**	**Sample Type**
Dissolved Oxygen Saturation[8], Percent	---	Report	1/Month (Formalin Absent)	Grab
Water Temperature, ˚F	---	Report	1/Month (Formalin Absent)	Grab
Formaldehyde[9], mg/l	3.8	6.9	1/Week (Formalin Present)	Grab
Dissolved Oxygen[9], mg/l	---	Report	1/Week (Formalin Present)	Grab

NOTE: See pages 10 through 11 for explanation of the various footnotes.

4. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from **outfall serial number 008** overflow water from West Branch Raceways into York Pond. Such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

Effluent Characteristic	**Discharge Limitations**			**Monitoring Requirements**	
	Average Monthly	**Maximum Daily**	**Maximum Annually**	**Measurement Frequency**	**Sample Type**
Flow (MGD)	Report	---	---	1/Week	Flow Meter or weir calculation[1]
TSS	Report lbs/day Report mg/l	Report lbs/day Report mg/l	---	1/Quarter[2]	24-Hour Composite
BOD_5	Report lbs/day Report mg/l	Report lbs/day Report mg/l	---	1/Quarter[2]	24-Hour Composite
Total Phosphorus as P[3]	Report lbs/day Report mg/l	Report lbs/day 0.05 mg/l	190 lbs/year[10]	1/Month[2]	24-Hour Composite
Total Nitrogen as N	Report lbs/day Report mg/l	Report lbs/day Report mg/l	---	1/Quarter[2]	24-Hour Composite
pH Range[4]	6.0 to 8.0 standard units			1/Week	Grab
Fish Biomass on Hand[5], lbs	Report	---	---	Monthly	Calculation
Fish Feed Used, lbs	Report	---	---	Monthly	Calculation
Efficiency of Fish Feed Used[6], Percent	Report	---	---	Monthly	Calculation

PART I.A.4 (continued)

Effluent Characteristic	Discharge Limitations			Monitoring Requirements	
	Average Monthly	Maximum Daily	Maximum Annually	Measurement Frequency	Sample Type
Total Residual Chlorine[7] (when Chloramine-T in use), mg/l	0.011	0.019	---	1/Day	Grab
Hydrogen Peroxide (when in use), mg/l	---	0.7	---	1/Day	Grab
Dissolved Oxygen[8], mg/l	---	Report	---	1/Month (Formalin Absent)	Grab
Dissolved Oxygen Saturation[8], Percent	---	Report	---	1/Month (Formalin Absent)	Grab
Water Temperature, ˚F	---	Report	---	1/Month (Formalin Absent)	Grab
Formaldehyde[9], mg/l	1.6	4.6	---	1/Week (Formalin Present)	Grab
Dissolved Oxygen[9], mg/l	---	Report	---	1/Week (Formalin Present)	Grab

NOTE: See pages 10 through 11 for explanation of the various footnotes.

EXPLANATION OF FOOTNOTES APPLICABLE TO Part I.A.1-4.

(1) The effluent flow shall be continuously measured and recorded using a flow meter and totalizer. In lieu of an effluent flow meter, weir calculations may be used to report effluent flow. To obtain approval for flow measurement method(s) other than a flow meter and totalizer, or weir calculations, the permittee shall submit a written description of the proposed method(s) to EPA and receive written authorization via certified letter before proceeding with this alternate approach.

If ice formation prevents the measurement of effluent flow during the winter months of November through April, flow shall be estimated. When flow is estimated, enter an "ES" code for "Estimate" in the "sample type" box on the appropriate monthly Discharge Monitoring Report (DMR).

(2) Once per quarter is defined as a sample collected once during each calendar quarter ending March 31st, June 30th, September 30th and December 31st each year. A sample is required each calendar quarter that a discharge occurs on more than one day. Analytical results shall be submitted with that month's DMR.

(3) The minimum level (ML) for phosphorus is defined as 10 micrograms per liter (µg/l). EPA defines the minimum level as the level at which the entire analytical system shall give recognizable signal and calibration points. This value is the ML for phosphorus using EPA approved methods found in the most currently approved versions of Standard Methods for the Examination of Water and Wastewater. One of these methods must be used to determine total phosphorus. Sample results less than 10 µg/l shall be reported as zero on the DMR.

(4) Limit is a State Certification Requirement.

(5) In addition to reporting fish biomass on hand, the permittee shall submit a written report with its monthly DMR of any significant import and/or export of fingerling or greater size fish which occurred during the reporting month. The report shall include the dates and quantities of each import and/or export. In lieu of a written report, the permittee is allowed to submit a copy of the permittee's appropriate in house "monthly reports form" as long as that form contains information relevant to any significant import and/or export of fingerling or greater size fish which occurred during the reporting month. This report excludes any fish mortality data as that is covered separately under Part I.A.10.

(6) Efficiency of Fish Feed Used = [Fish Weight Gain (lbs)/Fish Food Fed (lbs)] x 100

(7) The ML for total residual chlorine is defined as 20 µg/l. For total residual chlorine, this is the ML for chlorine using EPA-approved Method 4500-Cl Methods E and G found in the most currently approved versions of Standard Methods for the Examination of Water and Wastewater. One of these methods must be used to determine total residual chlorine. Sample results of 20 µg/l or less shall be reported as zero on the DMR, since compliance/non-compliance is determined based on the ML.

(8) Dissolved Oxygen (DO) samples shall be collected from a discharge that is Formalin free. Report the MINIMUM DAILY DO concentration for the month, and the corresponding DO percent saturation and effluent temperature associated with the minimum monthly DO sampling result.

(9) In order to capture the maximum concentration of Formaldehyde, sampling for Formaldehyde shall occur as soon as possible after any application of Formalin to the hatchery's culture water, after accounting for its detention time through the raceways, tanks and piping networks to the outfall. The detention time calculation shall take into account dosage, injection point, facility flow (both velocity and volume), etc. where possible [See Part I.B.4.e.ii.]. A sample for DO shall be collected concurrently with that for Formaldehyde and reported under the appropriate DO column on the monthly DMR. Report the MINIMUM DAILY DO concentration sampling result for the month.

Formaldehyde shall be tested using EPA Method 1667, Revision A, or 8315A. The ML for Formaldehyde is 50 µg/l. Alternate analytical method(s) shall be approved by EPA at the permittee's written request as long as the permittee utilizes method(s) that obtain MLs that are equal to or less than 50 µg/l. Such a request, if granted, will be considered a minor modification to the permit.

(10) Annual maximum total phosphorus load from Outfall 008 shall be reported annually in the December DMR. Total annual load shall be calculated as the sum of monthly total phosphorus load for the calendar year based on the average monthly load (lbs/day) per month and number of days per month.

Part I.A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

5. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge miscellaneous waters from each of the four outfalls listed in the table below, as specified under **Type of Discharge Water** into the respective receiving water without monitoring, on an as needed basis. The specific intent of this authorization is to allow for a discharge from the **Discharging Unit** shown in the table below for the sole purpose of emptying it of incidental quantities of water and/or overflow water from Diversion Pond pipeline; however, the discharge of any bottom sediments along with this discharge is strictly prohibited.

Outfall Number	Receiving Water	Discharging Unit	Type of Discharge Water
001	Cold Brook	Salmon Pond Distribution Box	Water contained in Distribution Box
002	Cold Brook	Lime Mill Distribution Box	Water contained in Distribution Box and upgradient pipelines
003	Cold Brook	Distribution Box at head of Young's Raceways	Water contained in Distribution Box and upgradient pipelines

006	West Branch Upper Ammonoosuc River	Overflow Outlet Box located just downgradient of Diversion Pond	Water from Diversion Pond, Outlet Box and upgradient pipeline

6. The discharge shall not cause a violation of the water quality standards of the receiving water.

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

8. Toxic Controls

   a. No components of the effluent shall result in any demonstrable harm to aquatic life or violate any water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards, with the permittee being so notified.

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

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

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

   b. Controls any pollutants not limited in the permit. If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the CWA.

10. The permittee shall notify EPA and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) within 24 hours upon the occurrence of any mortality of greater than 25 percent in any aquatic species under culture at the facility (excluding larval fish and eggs) during a single mortality event in accordance with reporting requirements in Standard Conditions Part II.D.1.e.

11. The permittee shall inform the EPA and NHDES-WD in writing at least ninety (90) days before any change in the fish species to be raised or development stage to be attained at this facility, and before any increase in annual fish biomass greater than 20 percent.

12. There shall be no direct discharge of "cleaning water" from any outfall. Cleaning water is

defined as any water from the facility's hatchery house, raceways, ponds, canals, circular tanks, etc. which contains settled solids that have accumulated on the bottom of such structures that is discharged, absent some form of solids removal, directly to the receiving water during periodic cleaning operations. The discharge of water from the hatchery house, raceway, pond, canal, circular tank, etc. to a settling tank, empty raceway and/or clarifier for the purposes of settling solids, including the temporary storage, of those solids is allowed. The discharges of any decant water that accumulates above those solids and/or any water that flows slowly over those solids is allowed.

13. Any hypochlorite solution applied to the surface of any rearing equipment exposed to culture water must be neutralized prior to that equipment being exposed to culture water.

14. There shall be no discharge of iodine and/or phosphoric acid solution(s) to the receiving water.

15. The permittee shall use only those Aquaculture Drugs and Chemicals approved by the U.S. Food and Drug Administration (USFDA) and in accordance with labeling instructions or as allowed in Part B.1 immediately below. EPA will defer to the USFDA regarding whether or not a particular drug and/or chemical is used in accordance with appropriate USFDA requirements.

    Each year as an attachment to the December DMR, the permittee shall certify in writing that all Aquaculture Drugs and Chemicals used at the hatchery during that calendar year were drugs approved by the USFDA and were used in accordance with USFDA labeling or as allowed under Part B.1 "Drug Use."

B. NARRATIVE EFFLUENT LIMITATION REQUIREMENTS

1. Drug Use

    Except as noted below, the permittee must notify EPA and the NHDES-WD 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 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 NHDES-WD a written report of impending INAD use within 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 INADs and extra-label drug uses, the permittee must provide an oral report to EPA and NHDES-WD as soon as possible, preferably in advance of use, but no later than 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 INADs and extra-label drug uses, the permittee must provide a written report to EPA and NHDES-WD within 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 NHDES-WD 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, flooding, 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 NHDES-WD within 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 NHDES-WD within 5 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 of a spill of drugs, pesticides or feed occurs that results in a discharge to water of the United States, the permittee must provide an oral report of the spill to EPA and NHDES-WD within 24 hours of its occurrence and a written report within 5 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 maintain a BMP Plan (PLAN) upon the permit's effective date 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 NHDES-WD upon request. Within 90 days following the permit's effective date, the permittee shall certify in writing to EPA and NHDES-WD that a written PLAN has been updated 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 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 NHDES-WD 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; include the date the change triggering the amendment occurred. The permittee shall also document the 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. Continue use of low phosphorus feed.

   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.12. 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 re-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 and on a regular basis to prevent discharge to waters of the United States, except in cases where EPA and NHDES-WD authorize 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 New Hampshire waters from becoming established in the local surface waters.

   ii. Provide a description of the storage and treatment of discharges 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 waters 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 for aquatic animal rearing units documenting the feed amounts and estimates of the number and weight of aquatic animals.

ii. In order to show how the maximum concentration of Formaldehyde in the discharge was derived, maintain records by outfall of the approach/analyses used to determine the elapsed time from its application to its maximum (peak) effluent concentration.

iii. 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.), 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) and Chemical Abstracts Service Registry number for each active aquaculture drug or chemical.

vii. The method or methods, if any, used to detoxify the wastewater prior to its discharge.

viii. The persistence and toxicity in the environment.

ix. Information on 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 of test organisms (LC_{50}) 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 C.F.R .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. SPECIAL CONDITIONS

Monitoring of York Pond's Water Column

The permittee shall obtain a Secchi disk reading and collect a 3 meter (equivalent to 9 feet – 10 inches) depth-integrated composite sample from the water column of York Pond at its deepest point once during the months of June, July and August each year and perform on each sample Total Phosphorus and Chlorophyll-a analyses as described below. The depth-integrated composite sample shall be collected from the pond's water surface to a point no closer than 3 feet above the bottom sediments. If the depth at the deepest point does not allow for the collection of a 3 meter depth-integrated composite sample, collect a depth-integrated composite sample from the water surface to a point 3 feet above the bottom sediments recording the depth (in feet or meters) over which the depth-integrated water sample was collected. Each year, results from all three samplings shall be reported with the DMRs for October which are due to the Agency by November 15th.

For purposes of analysis and reporting, Chlorophyll-a analysis shall be performed using Standard Methods for the Examination of Water and Wastewater, 20th or subsequent Edition(s), Method 10200 H Chlorophyll using a modification by Strickland, J.D.H. and Parsons, T.R., A Practical Handbook of Sea Water Analysis, Fisheries Research Board of Canada, Bulletin No. 167, 1972, 310 pages and Total Phosphorus shall be performed using a method with a ML of 10 µg/l. This ML is exactly the same ML used for analyzing total phosphorus in effluent samples [See footnote (3) on page 10 of this permit]. The modification to Method 10200 H utilizes an alternative filter medium (i.e., replaces glass fiber or membrane filter with a nitrocellulose membrane filter) and that modification can be found in the Standard Operating Procedures for Chlorophyll-a performed by the NHDES-WD Limnology Center.

D. MONITORING AND REPORTING

1. For a period of one year from the effective date of the permit, the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows a permittee to electronically submit discharge

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

a. Submittal of Reports Using NetDMR

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

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

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

b. Submittal of NetDMR Opt-Out Requests

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

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

and

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

c. Submittal of Reports in Hard Copy Form

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

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

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

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

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

E. STATE PERMIT CONDITIONS

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

a. The permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).

2. This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13. Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of the Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation.

NPDES PART II STANDARD CONDITIONS
(January, 2007)

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

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

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

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

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

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

2. Permit Actions

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

3. Duty to Provide Information

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

4. Reopener Clause

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

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

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

5. Oil and Hazardous Substance Liability

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

6. Property Rights

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

7. Confidentiality of Information

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

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

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

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

8. Duty to Reapply

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

9. State Authorities

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

10. Other Laws

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

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. Bypass not exceeding limitations

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

c. Notice

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

d. Prohibition of bypass

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

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

5. Upset

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

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

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

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

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

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

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

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

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

c. Records of monitoring information shall include:

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

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

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

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

2. Inspection and Entry

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

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

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

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

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

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

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

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

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

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

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

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

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

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

e. Twenty-four hour reporting.

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

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

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

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

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

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

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

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

2. Signatory Requirement

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

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

3. Availability of Reports.

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

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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

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

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

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

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

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

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

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

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

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

Construction Activities - The following definitions apply to construction activities:

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

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

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

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

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

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

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

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

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

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

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

Discharge of a pollutant means:

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

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

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

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

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

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

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

EPA means the United States "Environmental Protection Agency".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NPDES means "National Pollutant Discharge Elimination System".

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

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

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

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

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

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

(a) Sewage from vessels; or

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Waters of the United States means:

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

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

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

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

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

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

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

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

(f) The territorial sea; and

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Range land is open land with indigenous vegetation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. Commonly Used Abbreviations

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

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

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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FACT SHEET

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

PUBLIC NOTICE START AND END DATES: January 4, 2013 thru February 2, 2013

NPDES PERMIT NO.: NH0000621

NAME AND MAILING ADDRESS OF APPLICANT:

New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301-6500

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Facility Location

Berlin Fish Hatchery
York Pond Road
Berlin, New Hampshire

Mailing Address

New Hampshire Fish and Game Department
Berlin Fish Hatchery c/o
Superintendent
York Pond Road
RR3, P.O. Box 3783
Berlin, New Hampshire 03570

RECEIVING WATER: No. 9 Brook, York Pond, Cold Brook and West Branch Upper Ammonoosuc River (All in Hydrologic Basin Code: 801010701)

CLASSIFICATION: Class B

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I. Proposed Action, Type of Facility and Discharge Location

The applicant, New Hampshire Fish and Game Department (NHF&GD), has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit for the discharge of culture water from its Berlin State Fish Hatchery, a concentrated aquatic animal production (CAAP) facility. Presently, this state owned and operated facility is engaged in the rearing of various species of trout (eastern brook, rainbow and brown) as well as maintaining an eastern brook trout brood fish population as a source of eggs for hatching at the Berlin State Fish Hatchery. Berlin transfers a portion of its hatched eastern brook trout population at the fingerling stage to other state facilities for grow out for yearling stocking the following year. In addition, a portion of the rainbow and brown trout started at the Milford, New Hampton and Twin Mountain Hatcheries are transferred to Berlin as

fingerlings for grow out for yearling stocking. The majority of these trout are yearling size (8 to 12 inches) with an average age of 15 to 18 months at stocking; however, the brood fish trout population ranges up to 4 years old. Following egg taking during their fourth year, the brood fish are stocked the following spring. All fish from this facility are used for fisheries management (stocking) in selected New Hampshire waterbodies.

A concentrated aquatic animal production (CAAP) facility is defined in 40 Code of Federal Regulations (C.F.R.) Section 122.24(b) and 40 C.F.R. Part 122 Appendix C as a 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 that 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 NHF&GD's annual production targets and maximum annual harvestable weight value, this facility has the capacity to produce more than 20,000 lbs of cold water fish per year and will continue to discharge more than 30 days in a given year during the next permit cycle. As a result, the Berlin State Fish Hatchery meets the threshold production level for a CAAP facility defined in 40 C.F.R. 122.24(b).

This facility has been designated a CAAP facility because according to its application dated September 25, 2009, yearly production for all species raised at the hatchery (Eastern brook trout, brown trout and rainbow trout) is 90,000 - 97,000 pounds per year. On their application, NHF&GD reported a maximum feeding rate of 15,319 lbs for August 2009.

Discharges from CAAP operations typically contain organic and inorganic solids, nutrients and also chemicals used in the prevention and treatment of various diseases. Any of these constituents could impair the water quality in the receiving water. Solids in the discharge occur both in the dissolved and particulate form as a result of fish feces and uneaten food particles. Nutrients such as phosphorus and nitrogen are associated with these solids. In sufficient concentration, solids and nutrients have the potential to create dissolved-oxygen deficits in the receiving water due to the decay of organic solids. The presence of nutrients allow for 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 Berlin State Fish Hatchery's current; i.e., "existing," permit became effective on July 1, 2005 and expired on June 30, 2010. The applicant has requested renewal of its NPDES permit to discharge effluent (untreated water used in rearing trout) into the designated receiving water and has submitted the proper application materials. Their current permit has been administratively extended as per 40 CFR Section 122.6 until a new permit can be issued.

The current permit authorizes a year round discharge to the waters of the United States from various outfalls, and EPA proposes that the authorization to discharge will be continued with limits, monitoring requirements and Best Management Practices as described in this Fact Sheet and shown in the accompanying Draft Permit. See Attachment A for the location of the Berlin hatchery, hatchery raceways, outfalls and its various receiving waters to which the hatchery's rearing units discharge.

II. Description of Facility and Discharge

The Berlin State Fish Hatchery is located on York Pond Road in the Town of Berlin in the White Mountain National Forest on 510 acres of land under the jurisdiction of the United States Forest Service. Originally, this hatchery was established by the U.S. Fish and Wildlife Service in 1921 as an egg-taking station for Eastern brook trout. The hatchery was acquired by the NHF&GD in 1983 as a fish production facility for stocking in New Hampshire water bodies. All domestic wastewater is discharged to an on-site septic tank with multiple leach field systems, and all floor drains in the various working buildings have been plugged with concrete.

Fish rearing units at this hatchery complex consist of a Hatchery Building, various ancillary support buildings and four sets of raceways: Young's Raceways; Foster's Covered Raceways; West Branch Raceways; and Upper Canal Raceways. See Attachment A and B. These raceways are used to rear various species of trout from egg and fingerling size to yearling size. The hatchery also maintains an education (visitor) center and a Show Pool in which a few trout are kept for public viewing and feeding. Water from these rearing units, including Show Pool and No Name Pond (which is part of the West Branch Raceway), discharge through multiple outfalls to streams adjacent to or in close vicinity to the four race ways. At any given time, not all the culture units are in use. Just before the annual stocking (usually in April for northern New Hampshire) the biomass of those fish ready for stocking in the rearing units is usually at its yearly maximum.

The majority of water for the rearing units/raceways is obtained from various surface- and ground-water sources. Ground water is pumped directly to the Lime Mill Distribution Box from Wells Number 1 and 2 located on the northern edge of York Pond. Once discharged to a raceway complex, the water flows serially in the rearing units by gravity. See Attachment B. Table 1 lists the water sources for the various rearing units or raceways. Table 2 provides the estimated flow rates of these waters to the various rearing units at full utilization of each set of raceways.

Table 1: Water Sources Available to Rearing Units/Raceways[1]

Rearing Unit	Water Sources Available to Rearing Unit(s)
Hatchery Building	2 Wells, Springs and Cold Brook
Young's Raceways	2 Wells, Springs and Cold Brook plus overflow from Hatchery Building when in use
Show Pool	2 Wells, Springs and Cold Brook plus overflow from Hatchery Building when in use
Foster's Covered Raceways	Serial reuse water from Young's Raceways augmented when needed with water from 2 Wells, Springs and Cold Brook plus overflow from Hatchery Building when in use
Upper Canal	Diversions from Third Brook and West Branch Upper Ammonoosuc River
West Branch Raceways	Serial reuse water from "A, B, C" Canals augmented with diversions from No. 9 Brook

[1]Depending on the level of fish production and the availability of water, individual rearing units may not receive water from all sources shown.

Table 2: Estimated Average Daily Flow Rates from Rearing Units and Settling Ponds[1]

Flat Pond (Outfall 004)	Canal Raceway (Outfall 005)	No Name Pond (Outfall 007)	West Branch Raceways (Outfall 008)
1.37 mgd[2]	4.14 mgd	0.6 mgd	1.7 mgd

[1]When Operating at Full Utilization
[2] mgd - Million Gallons Per Day

Fish in the various rearing units are fed during daylight hours by hand broadcasting fish food onto the surface of each active rearing unit at a frequency and size (granule/pellet) that depends on the age/size of the fish being reared. Normally, feedings range from seven to eight times per day when the fish first swim-up looking for food through fingerling stage to once per day for yearling and older life stages. For those raceways that freeze over during the winter, feeding is still once per day with no feeding on Sundays. Feeding during freezing conditions is done sparingly as compared to non-freezing conditions. The composition of this fish food varies from a high around 55 to 57 % protein and 1.2 % phosphate for the youngest fish up through fingerling in size, to a low around 43 % protein and 1.0 % phosphate for fish 6 to 8 inches and larger in size. The size of this feed ranges from 0.25 to 0.56 millimeters (mm) for fish less than 1-inch in length to 3 to 6 mm for fish 6 to 8 inches and larger.

As mentioned previously, solids in the culture water are generated from only two sources: fish feces and uneaten food particles. Water flows continuously through each of the various rearing units containing fish and entrains a portion of the fish feces and uneaten food in it; however, the bulk of these solids settle to the bottom of each rearing unit for later removal at regular intervals during the cleaning process. The hatchery has two types of water flow that discharge pollutants to the receiving water. One is "overflow" water which flows continuously in a serial manner from one rearing unit to the next in a raceway. Overflow water contains insignificant concentrations of solids. The other water flow is "cleaning" water which does contain significant concentrations of settled solids from the bottom of individual rearing units. Cleaning water containing settled solids that have accumulated on the bottom of active rearing units is discharged along with a portion of the raceway during periodic cleaning operations.

The water level in each of the linear raceways is controlled by flash boards at the raceways downstream end. Just upstream of the flash boards are the fish retaining racks (screens) to keep fish within the individual raceway units/segments. Between the flash boards and the fish racks is a quiescent zone into which solids (fish feces and uneaten food particles) settle from the overflow water just before it discharges from the raceway. These settled solids are removed at regular intervals with a portion of the overflow through a cleaning drain located in the base of the quiescent zone. Since raceways, may not completely self clean; i.e. solids settle out in the raceways upstream of the quiescent zone, manual sweeping of the raceway may be necessary during the quiescent zone cleaning. Normally, fish remain in their rearing units during these bottom cleaning operations. Because each major raceway rearing unit may contain two or more linear sub raceways, the drain(s) in each quiescent zone are opened one at a time for a few minutes (< 10). The Show Pool, a circular tank, is cleaned by opening the outlet box, a rudimentary sediment trap, and flushing it for about one minute. When in use, all rearing units require routine cleaning at frequencies that range from once per day for newly hatched fish to once per week for younger fish to once every two weeks for older fish or as determined by the fish culturist.

At the Berlin hatchery solids contained in the overflow water and cleaning water from the Hatchery Building, Young's Raceway, the Show Pool and Foster's Covered Production Raceways receive treatment by settling in Flat Pond. Solids contained in the overflow water and cleaning water from the West Branch Raceways receive treatment by settling in No Name Pond. Additionally, the bottom two raceways of the West Branch Raceway are no longer used for fish rearing. Fish have been removed from these two raceways to facilitate solids removal prior to the overflow water discharging to York Pond. Solids in the B Canal of the Upper Canal Raceways are removed by a vacuuming and sent to No Name Pond for further treatment.

Additionally, freezing temperatures and low water flow rates and/or site raceway configuration necessitate alternate cleaning procedures for the West Branch Raceways and the B Canal. Specifically, at the West Branch Raceways during the winter months (November through April) ice formation (freeze over) in the rearing units prevents cleaning and, as a consequence, the fish are fed sparingly once per day with nothing on Sundays through feed boxes set into the ice. During summer months (July through September) minimal cleaning occurs with settled solids being siphoned into the cleaning water drain to conserve water due to low water flows and increased water temperatures. Similar conditions exist in B Canal for during the winter months freeze over in the canal prevents

cleaning and the fish are fed sparingly once per day with nothing on Sundays through feed boxes set into the ice. During the rest of the year, the block is vacuumed as needed.

Table 3 summarizes the various types of discharge overflow and cleaning water discharges by outfall and rearing unit.

Table 3: List of Discharges (Outfalls) to Receiving Water[1]

Outfall Number	Receiving Water	Discharging Unit(s)	Type of Discharge Water(s)
001	Cold Brook	Salmon Pond Distribution Box	Water contained in Distribution Box.
002	Cold Brook	Lime Mill Distribution Box	Water contained in Distribution Box and upgradient pipelines.
003	Cold Brook	Distribution Box at head of Young's Raceways	Water contained in Distribution Box and upgradient pipelines.
004	Cold Brook	Hatchery Building, Young's Raceways, Show Pool and Foster's Covered Production Raceways discharge to Flat Pond.	Overflow and Cleaning waters from Hatchery Building, Young's Raceways, Show Pool and Foster's Covered Production Raceways to Flat Pond.
005	No. 9 Brook	Upper Canal Raceway	Overflow water from A, B and C Canals.
006	West Branch Upper Ammonoosuc River	Outlet Box for Diversion Pond	Water from Diversion Pond, Outlet Box and upgradient pipeline.
007	West Branch Upper Ammonoosuc River	West Branch Raceways and No Name Pond.	Cleaning water from West Branch Raceways to No Name Pond.
008	York Pond	West Branch Raceways	Overflow water from West Branch Raceways.

[1]Refer to Attachment A and B for locations of outfalls and rearing units.

Chemicals, Drugs, and Disinfectants Currently Used in the State's Fish Hatchery System

Normally, fish hatched from eggs in the State's hatchery system take between 15 to 18 months to grow out to the proper size of length/weight for stocking. According to hatchery officials, the key to maintaining good fish health is to prevent pathogens from entering the hatchery and to maintain clean, healthy rearing units. However, when needed, U.S. Food and Drug Administration (FDA)-approved chemicals/drugs are used as therapeutants to maintain fish health. Below is a list of all the chemicals/drugs currently used in the New Hampshire State Fish Hatchery system along with their intended use, followed by a subset of that list for those used at the Berlin State Fish Hatchery. A review of the first ten chemicals/drugs in New Hampshire's overall list indicates they are all FDA approved therapeutants and/or low regulatory priority aquaculture drugs, except for Chloramine-T, which is an investigational new animal drug (INAD). For the last four chemicals (hypochlorite solutions, oxygen gas and a solution of iodine and phosphoric acid), EPA will not regulate (limit their use) of these chemicals as long as any applied hypochlorite solution is neutralized with sodium thiosulfate prior to it being exposed to culture water, and the facility continues to not discharge any of the iodine and phosphoric acid solution to the hatchery's culture water. Adding oxygen gas to the culture water to increase its dissolved oxygen concentration is always appropriate and leads to increased dissolved oxygen concentrations in the discharged effluent, always a positive environmental outcome.

- Calcium Chloride (Crystalline Form): Added to culture water to increase total hardness of the water.

- Formalin (37 % Formaldehyde Gas in Water with 16 % Methanol): Added as needed to culture water to control external parasites on fish and eggs. Used primarily to kill swimming zoospores and filamentous hyphae of common mold (fungus) that attach to eggs, gills and/or skin as well as other active parasitic infections. The FDA restricts the use of formalin solution to three products with the following trade names: Formalin-F, Paracide-F, and Parasite-S.

- Oxytetracycline Hydrochloride - Also called Terramycin (Crystalline Form): Used as an antibiotic and added as needed to culture water to control pathogenic gill bacteria on fish.

- Polyvinylpyrrolidone (Iodine in 10 % aqueous solution) - Also called Povidone Iodine: Used as needed to disinfect fish eggs and hatchery equipment. Solution is not discharged to the culture water.

- Potassium Permanganate (Crystalline Form): Added as needed to the culture water to provide temporary increase in the concentration of dissolved oxygen.

- Romet 30 (Contains 25 % Sulfadimethoxine and 5 % Oremetoprim): Used as an antibiotic and, on an as need basis, mixed with fish food to control systemic bacterial pathogens.

- Sodium Chloride (Crystalline Form): Added as needed to culture water to reduce osmotic pressure gradient between fish and water for the absorption of dissolved oxygen by the gills.

- Tricaine Methanesulfonate B - Also called MS-222 (Crystalline Form): Used as a fish anesthesia, but only in separate containers of culture water and is not added to any of the rearing units. Used as needed and solution is not discharged in the culture water.

- Chloramine-T (N-chloro tosylamide sodium salt): Chloramine-T is an investigational new animal drug used to treat bacterial gill disease (caused by *Flavobacterium branchiophilium*) in salmonid fish species.

- 35% PEROX-AID® (hydrogen peroxide solution): Used 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*).

- Calcium Hypochlorite (Crystalline Form): See Sodium Hypochlorite.

- Sodium Hypochlorite at 5.25 % (Ordinary Household Bleach in Liquid Form): Both hypochlorite chemicals are used to disinfect hatchery equipment and the individual rearing units, as needed. Hypochlorite solutions used to disinfect hatchery equipment (nets, boots, brushes, foot baths, rakes, transport tanks, etc.) are not discharged to the hatchery water and any hypochlorite solution remaining on that equipment is neutralized with sodium thiosulfate prior to its re-introduction into the culture water. If the hatchery needs to disinfect any rearing units, the fish and culture water would first be removed followed by brushing down all surfaces in contact with the culture water with a hypochlorite solution. In turn, that would be followed by a brushing down with sodium thiosulfate to neutralize the chlorite ion followed by an on the spot test using phenolphthalein indicator solution to determine if neutralization has been completed. It is standard practice to use sodium thiosulfate (i.e., a dechlorination agent) to neutralize chlorine in NPDES permits.

- Oxygen Gas: Added to culture water to enhance fish respiration for life support as needed.

- Solution of Iodine and Phosphoric Acid: Used to disinfect hatchery equipment only at the Berlin State Fish Hatchery. Used as needed and solution is not discharged to the culture water.

Chemicals, Drugs, and Disinfectants Routinely Used at the Berlin State Fish Hatchery

- Formalin - 37 % Formaldehyde Gas in Water with 16 % Methanol

- Chloramine-T (N-chloro tosylamide sodium salt)

- 35% PEROX-AID®

- Polyvinylpyrrolidone (Iodine in 10 % aqueous solution) - Also called Povidone Iodine

- Sodium Chloride (Crystalline Form)

- Sodium Hypochlorite at 5.25 % (Ordinary Household Bleach in Liquid Form)

Review of drug and chemical usage practices at the hatcheries, and the material safety data sheets for the above listed materials indicates that Formalin, Chloramine-T, and PEROX-AID® require effluent

limitation because they have a reasonable potential to exceed New Hampshire's Surface Water Quality Regulations. The draft permit contains effluent limitations for total residual chlorine (when Chloramine-T is in use), hydrogen peroxide (when 35% PEROX-AID® is in use), and formaldehyde (when Formalin is in use). See sections entitled "Total Residual Chlorine," "Hydrogen Peroxide" and "Formalin" later in this Fact Sheet.

Attachment C summarizes effluent monitoring data for Outfalls 005, 006, 007, and 008 from July 2005 through April 2012. A summary of reported values for food feed, fish on hand, and outfall flows during this period is presented in Table 4.

Table 4. Average monthly food fed, fish on hand, and maximum daily flow Berlin State Fish Hatchery Outfalls from July 2005 through April 2012.

		Food	Fish on Hand	Flow
		Monthly Average	Monthly Average	Daily Max
		lbs/day	lbs/day	MGD
Outfall 004	MIN	62.23	100.75	0.90
	MAX	286.00	1447.34	2.30
	AVG	148.23	781.08	1.37
Outfall 005	MIN	0.00	0.00	2.40
	MAX	102.67	1187.95	6.30
	AVG	40.72	356.01	4.14
Outfall 007	MIN	--	--	0.05
	MAX	--	--	1.50
	AVG	--	--	0.60
Outfall 008	MIN	1.03	0.00	0.80
	MAX	267.84	1966.04	2.60
	AVG	104.90	1140.65	1.70

III. Description of Receiving Waters

West Branch Upper Ammonoosuc River downstream of the hatchery (Assessment unit NHRIV801010701-11), which ultimately receives all the effluent discharge from the Berlin State Fish Hatchery, is designated as Class B waterbody pursuant to RSA 485-A:8 of the New Hampshire Statutes. Class B waterbodies are considered suitable for fishing, swimming and other recreational purposes, and for use as a water supply after adequate treatment.

The West Branch Upper Ammonoosuc River (Assessment unit NHRIV801010701-06), Number Nine Brook – Diversion Pond Dam (Assessment unit NHIMP801010701-02), Cold Brook (Assessment unit NHRIV801010701-08), and West Branch Upper Ammonoosuc River downstream of the hatchery (Assessment unit NHRIV801010701-11) are not listed as impaired on NHDES's *Final 2010 Section 303(d) Surface Water Quality List*. Aquatic life, swimming and boating, and wildlife uses for these waterbodies were not assessed in 2010. Fish consumption is listed as marginal non-support due to atmospheric deposition of mercury (a state-wide listing). The waters of the White Mountain National

Forest, which include the receiving waters at the Berlin State Fish Hatchery, are administratively designated as Outstanding Resource Waters in accordance with Env-Wq 1708.05 (a).

York Pond (Assessment unit NHLAK801010701-02) is listed as impaired NHDES's *Final 2010 Section 303(d) Surface Water Quality List*. Aquatic life and primary contact recreation (i.e., swimming) are impaired due to elevated chlorophyll-a, total phosphorus, and cyanobacteria (hepatotoxic microcystins). Secondary contact recreation (i.e., boating) and wildlife uses were not assessed. Fish consumption is listed as marginal non-support due to atmospheric deposition of mercury (a state-wide listing).

IV. Limitations and Conditions

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

V. Permit Basis: Statutory and Regulatory Authority

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a 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. During development, EPA considered the most recent technology-based treatment requirements, water quality-based requirements, and all limitations and requirements in the current/existing permit. The regulations governing the EPA NPDES permit program are generally found at 40 C.F.R. Parts 122, 124, 125, and 136. The general conditions of the draft permit are based on 40 C.F.R. § 122.41 and consist primarily of management requirements common to all permits. The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308(a) of the CWA in accordance with 40 C.F.R. § 122.41(j), § 122.44(i), and § 122.48.

1. Technology-based Requirements

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

In general, statutory deadlines for meeting technology-based guidelines (effluent limitations) established pursuant to the CWA have expired. For instance, compliance with the effluent limitations guidelines for fish hatcheries is, effectively, from date of permit issuance (See 69 Federal Register 162, August 23, 2004 Part I.E). 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, the

EPA promulgated new Effluent Limitations Guidelines and New Source Performance Standards (hereinafter referred to as ELGs) for CAAP facilities (See 40 C.F.R. Part 451).

Typically, ELGs express effluent limitations in the form of numeric standards for specific pollutants, but these ELGs express effluent limitations in the form of narrative standards in order to achieve reduced discharges of total suspended solids (TSS) and other materials that are generated during the process of culturing fish. The ELGs apply to the discharge of pollutants from facilities that produce 100,000 pounds or more of aquatic animals per year using flow-through, recirculating, net pen, or submerged cage systems and became effective on September 22, 2004. See Federal Register (FR) on August 23, 2004 (69 FR 51892-51930). Additional information relating to development of the ELGs can be found in "*Technical Development Document for the Final Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (Revised August 2004)*", EPA 821-R-04-01.

The Berlin State Fish Hatchery operates flow-through systems that meets the definition of a CAAP at 40 C.F.R. § 122.24(b) because, according to NHF&GD, it meets the production threshold value. This facility is not automatically subject to the ELGs found at 40 C.F.R. Part 451 because it is not expected to produce more than 100,000 pounds of aquatic animals per year.

Even though the Berlin State Fish Hatchery produces less than 100,000 pounds of aquatic animals per year, EPA has made a BPJ determination to apply the ELGs because this hatchery: (1) has been designated a CAAP, (2) operates flow-through rearing units, and (3) discharges to either the West Branch Upper Ammonoosuc River, No. 9 Brook or Cold Brook which provide little available dilution during low-flow periods (see discussion at Part VI. 1, Available Dilution, in this Fact Sheet). At a minimum, Berlin State Fish Hatchery must develop and implement operational measures in the form of Best Management Practices (BMPs) to reduce the discharge of solids, the majority of which are uneaten fish food and feces, to the receiving waters. The BMPs specifically protect the tributary's minimal assimilative capacity particularly during low-flow periods.

Accordingly, the general reporting requirements detailed in 40 C.F.R. § 451.3 have been incorporated into the draft permit. They require the permittee to report INAD or extra label drug usage, spills, structural failure, and/or damage to rearing units as well as to develop, implement, and maintain a BMP plan for the facility. The BMPs must address solids control, materials storage, structural maintenance of culture units and related equipment, recordkeeping, and training at the hatchery. A BMP plan requirements must represent best practicable control technology currently available, best available technology economically achievable, or the best conventional technology as applicable. The permitting authority can modify BMP requirements based on its exercise of best professional judgment (BPJ). See 40 C.F.R. §§ 451.11, 451.12, and 451.13.

2. Water Quality-based Requirements

Water-quality based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water quality standards. See Section 301(b)(1)(C) of the CWA. A water quality standard consists of three elements: (1) beneficial designated use or uses for a waterbody or a segment of a waterbody; (2) a numeric or narrative water quality criteria sufficient to protect the

assigned designated use(s); and (3) an antidegradation requirement to ensure that once a use is attained it will not be eroded.

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

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

3. Antibacksliding

EPA's antibacksliding provision as identified in Section 402(o) of the Clean Water Act and at 40 C.F.R. § 122.44(l) prohibits the relaxation of permit limits, standards, and conditions unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued. Antibacksliding provisions apply to effluent limits based on

technology, water quality, BPJ and State Certification requirements. Relief from antibacksliding provisions can only be granted under one of the defined exceptions [See 40 C.F.R. § 122.44(l)(2)(i)]. All limits included in the draft permit, except for pH, are as stringent as or more stringent than those in the previous permit. The draft permit includes a lower pH limit of 6.0, which is less stringent than the limit of 6.5 in the previous permit. During the last permit cycle, NHF&GD provided a pH demonstration study to support lowering the minimum pH limit consistent with the State Permit Conditions (see Section entitled "pH" later in this Fact Sheet). The demonstration study represents "new information" and is consistent with the exception to antibacksliding at 40 C.F.R. § 122.44(l)(2)(i)(B)(1).

4. Antidegradation

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

This draft permit is being reissued with permit conditions and effluent limitations as stringent as or more stringent than the current permit (except for pH, as previously discussed); with the addition of effluent limits for chlorine (acute and chronic) and peroxide (acute), monitoring of ammonia and an Outfall 008 phosphorous limit. The Draft Permit pH range, as the current permit's pH range, remains changed to 6.0 to 8.0 Standard Units (S.U.) from 6.5 to 8.0 S.U. The State of New Hampshire confirmed its support for the lowering of the pH limit consistent with the State Permit Conditions at Part.I.F.1.a. of the current permit in a letter to the hatchery supervisor on June 29, 2012. Since the draft permit continues to authorize the discharge of culture water with the same limitations as the present permit; coupled with the addition of effluent limits for chlorine (acute and chronic) and peroxide (acute), and an Outfall 008 phosphorous limit, EPA expects the State of New Hampshire to indicate that there will be no lowering of water quality and no loss of existing uses as a result of this proposed reissuance. Accordingly, no additional antidegradation review is warranted at this time.

VI. Explanation of Effluent Limitations Derivation

1. Available Dilution

Available dilution (also referred to as dilution factor) provided by the receiving water is determined using the hatchery's average and maximum daily discharge along with the annual 7Q10 low flow of the receiving waters. The available dilution is reduced by 10 % to account for the State's reserve capacity rule. The State's requirement to reserve 10 % of the Assimilative Capacity of the receiving water for future needs is pursuant to New Hampshire's Surface Water Quality Regulations Env-Wq 1705.01.

Gaged values of annual 7Q10 low flows upstream of the hatchery's outfalls are not available. During issuance of the current permit, EPA used the Dingman Equation to develop an estimate of the annual 7Q10 low flow value for the three streams (No. 9 Brook, West Branch Upper Ammonoosuc River, and Cold Brook) receiving hatchery effluent. The Dingman Equation considers drainage area, mean basin elevation and ratio of stratified drift to total drainage area. Using these estimated 7Q10 values and current daily flows for each outfall as reported DMRs from July 2005 through April 2012, EPA calculated dilution factors for Outfalls 004, 005, and 007 (Table 5) using the following equation:

$$DF = \left[\frac{Q_{River} + \left(Q_{Outfall} \times 1.547\right)}{Q_{Outfall} \times 1.547}\right] \times 0.9$$

where:

Q_{River} = 7Q10 low flow (cfs)
$Q_{Outfall}$ = Maximum daily (acute) or average monthly (chronic) hatchery flow (MGD)
1.547 = Conversion factor (MGD to cfs)
0.9 = Factor to reserve 10% assimilative capacity

Table 5: Estimates of dilution factor for hatchery outfalls based on 7Q10 low flow values from the current permit and reported average and maximum daily flows at each outfall in DMRs from July 2005 through April 2012.

	Receiving Water	7Q10 of Receiving Water (cfs)	Outfall Daily Flow (MGD)	Dilution Factor
Outfall 004	Cold Brook	0.41	Avg 1.4 Max 2.3	1.1 1.0
Outfall 005	No. 9 Brook	0.09	Avg 4.1 Max 6.3	0.9 0.9
Outfall 007	West Branch Ammunoosuc River	1.57	Avg 0.6 Max 1.5	2.4 1.5

Based on the 7Q10 low flow of the receiving waters and the reported flow from Outfalls 004 and 005, dilution of hatchery wastewater from these two outfalls is negligible at either average or maximum daily flow rates. EPA has assigned Outfalls 004 and 005 a dilution factor of 1.0. Dilution of cleaning water from Outfall 007 ranges from 1.5 to 2.4 depending on whether the factor is calculated using the average or maximum daily flow rate from July 2005 to April 2012. EPA has assigned Outfall 007 a chronic dilution factor of 2.4 for calculation of average monthly water quality-based limits and an acute dilution factor of 1.5 for calculation of maximum daily water-quality based limits. The dilution factors are more stringent than the dilution factor of 8.5 assigned to Outfall 007 in the current permit, which was based on a "worst-case" discharge of 0.12 MGD. The draft permit includes a maximum daily flow limit of 1.5 MGD at Outfall 007 to ensure that the acute dilution factor is representative of the discharge. Point-source discharges to ponds from free flowing ditches and channels, particularly

those that discharge at the pond's shoreline such as the ditch conducting effluent from the West Branch raceways to York Pond via Outfall 008, are considered by EPA-New England and the NHDES-WD to have negligible dilution; thus, are assigned an available dilution of 1.0.

2. Total Suspended Solids (TSS) and 5-Day Biochemical Oxygen Demand (BOD_5)

The current permit requires quarterly monitoring and reporting of Total Suspended Solids (TSS) and 5-Day Biochemical Oxygen Demand (BOD_5) in lbs/day and mg/l. A summary of maximum daily BOD5 and TSS values for each of the hatchery's outfalls is presented in Table 6. The narrative standards and reporting requirements in the technology-based effluent limitations guidelines (ELGs) for CAAP facilities (40 CFR Part 451) were incorporated into the current permit. These ELGs established narrative best management practices (BMPs) for solids control. In the preamble to the final rule (see 69 Federal Register (FR), August 23, 2004), EPA explained that it was not promulgating numerical limitations for TSS or any other pollutants because a well-operated program to manage feeding, in conjunction with good solids management, is "a key element in achieving effective pollution control at CAAP facilities" (69 FR 51907). EPA concluded that "a combination of settling technology and feed management control practices or rigorous feed management control and proper solids handling practices alone will achieve low levels of TSS" (69 FR 51908).

Table 6: Maximum Daily BOD_5 and TSS Values at Berlin State Fish Hatchery Outfalls.

Outfall		BOD_5		TSS	
		Daily Max		Daily Max	
		lb/d	mg/l	lb/d	mg/l
004	MIN	0.00	0.00	0.00	0.00
	MAX	35.00	3.00	42.53	3.00
	AVG	3.27	0.31	5.01	0.41
005	MIN	0.00	0.00	0.00	0.00
	MAX	150.00	3.00	100.00	3.00
	AVG	12.82	0.31	12.52	0.33
007	MIN	0.00	0.00	0.00	0.00
	MAX	25.00	3.00	16.68	2.00
	AVG	2.03	0.28	2.63	0.38
008	MIN	0.00	0.00	0.00	0.00
	MAX	79.00	5.00	47.00	3.00
	AVG	10.91	0.77	8.12	0.56

EPA and NHDES continued to require in the Draft Permit the BMP prohibiting the direct discharge of cleaning water to a receiving water in accordance with the antibacksliding requirements found in 40 C.F.R. § 122.44(1). This BMP ensures the range of BOD_5 and TSS concentrations discharged to the receiving water are protective of water quality and the existing and designated uses. The low sampling results for BOD_5 and TSS demonstrate the permittee has been able to achieve consistent success in applying this BMP. The draft permit additionally carries forward quarterly monitoring and reporting requirements for TSS and BOD_5 from the existing permit, which will enable EPA and NHDES to monitor the effectiveness of the BMPs for solids control.

3. pH

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

Env-Wq 1703.18(b) specifies that pH be in the range of 6.5 to 8.0 S.U. However, NHDES-WD may, in certain instances, recommend to the EPA a pH limit range that is more expansive than 6.5 to 8.0 S.U. contained in a previously issued permit. A change in the pH range would be considered if the applicant can demonstrate, to the satisfaction of NHDES-WD, that the in-stream NH Standards for pH would be protected. However, the pH limit range cannot be less restrictive than 6.0 - 9.0.

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

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

The pH limits, 6.0 to 8.0 Standard Units (S.U.), in the Draft Permit remain unchanged from the existing permit. The pH limit range contained in the Draft Permit is based on a pH study that

demonstrated that Berlin State Fish Hatchery's effluent discharge does not cause a degradation of the in-stream NH Standards for pH. In a letter dated June 29, 2012, NHDES-WD validated the hatchery's pH demonstration study and supported a pH adjustment for Berlin State Fish Hatchery's permit. The NHF&GD requested EPA allow the permit's pH limits to 6.0 to 8.0 S.U. from 6.5 to 8.0 S.U. by a letter dated June 29, 2012. EPA concurred with NHDES-WD's decision and granted the request by the Berlin State Fish Hatchery to expand the pH limit to 6.0 to 8.0 S.U. by a letter dated July 12, 2012.

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

A statistical analysis of the Berlin State Fish Hatchery's monthly pH data clearly shows low pH variability in the hatchery's effluent. The standard deviation for the minimum and maximum monthly pH value since July 2005 is presented in Table 7.

Table 7: Outfall pH Standard Deviation

Outfall	Low Monthly pH	High Monthly pH
Outfall 004	0.30	0.42
Outfall 005	0.29	0.34
Outfall 007	0.23	0.29
Outfall 008	0.23	0.24

These small standard deviations for both the lower and upper pH recorded readings confirm the low pH variability of the hatchery's effluent. Additionally, there have been no violations of the 6.0 to 8.0 S.U. pH limits since January 2008. Based on the low variability of the pH in the Berlin State Fish Hatchery effluent discharge, EPA has made a decision to retain the existing permits pH range of 6.0 to 8.0 S.U., and not to require any pH demonstration study.

4. Total Residual Chlorine

The facility uses hypochlorite solutions to clean/disinfect rearing units and hatchery equipment, but EPA and NHDES do not believe the use of hypochlorite solutions results in the presence of residual chlorine in the hatchery effluent. This is because hypochlorite solutions are not discharged directly into the culture water and any hypochlorite solution remaining on the equipment is neutralized with sodium thiosulfate prior to its exposure to that culture water.

The facility uses a chlorine containing compound to treat for disease. Namely, Chloramine-T, an investigational new animal drug (INAD), to treat bacterial gill disease caused by *Flavobacterium*

branchiophilium (FDA INAD #9321 Objective B). Its use must follow the INAD study protocol, and the facility is required to notify EPA as described in Part I.B.1 of the draft permit. The facility has indicated that the use of Chloramine-T will allow it to reduce its use of Formalin.

If treatment of diseased fish is needed, the facility's protocol consists of three consecutive daily static bath treatments of one hour duration with 20 mg/L of Chloramine-T. Following each one hour treatment, the facility will neutralize the treatment solution using sodium thiosulfate, and measure the chlorine residual in the rearing unit to ensure that the chlorine has been neutralized before restarting flow through the system.

The draft permit includes total residual chlorine (TRC) limits to confirm that chlorine in the effluent has been neutralized and ensure that Chloramine-T use at the facility does not cause chlorine criteria violations in the receiving water. There is no available dilution at the hatchery outfalls 004, 005, and 008, the maximum daily and average monthly TRC limits at these two outfalls are equal to the acute and chronic aquatic life criteria in the NH Standards (19 µg/l and 11 µg/l, respectively). The draft permit includes a maximum daily TRC limit at Outfall 007 equal to 29 µg/l based on an acute dilution factor of 1.5 and an average monthly TRC limit of 26 µg/l based on a chronic dilution factor of 2.4. The chlorine residual effluent limits and daily monitoring requirement apply whenever Chloramine-T and/or cleaning/disinfection chemicals are in use at the facility.

5. Hydrogen Peroxide

The facility uses 35% PEROX-AID® (hydrogen peroxide solution) as an external microbiocide for the control of mortality in freshwater-reared finfish eggs due to saprolegniasis, in freshwater-reared salmonids due to bacterial gill disease (*Flavobacterium branchiophilum*), and in freshwater-reared cool water finfish due to external columnaris disease (*Flavobacterium columnae*). 35% PEROX-AID® is an FDA-approved drug for freshwater-reared finfish, and its use must adhere to FDA label instructions. The facility has indicated that the use of 35% PEROX-AID® will allow it to reduce its use of formalin.

If a hydrogen peroxide solution is to be used at Berlin State Fish Hatchery, the facility's protocol is three consecutive daily static bath or continuous flow treatments of 30 to 60 minutes each with 100 mg/l of 35% PEROX-AID® according to the manufacturer's instructions. Treatments will be done one rearing unit at a time, and the tank water level will be lowered to minimize the amount of chemical needed to achieve the desired dosage, and to minimize peroxide levels in the hatchery effluent.

The NH Standards do not include aquatic life criteria for hydrogen peroxide, but Env-Wq 1703.21(a) does require that all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that injure or are inimical to plants, animals, humans, or aquatic life. The FDA has derived hydrogen peroxide water quality benchmarks for use by NPDES permitting authorities (*See "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*). For freshwater aquatic life, the acute benchmark (criteria maximum concentration) is 0.7 mg/l. This acute water quality "benchmark" was determined using EPA guidance for deriving water quality criteria. The FDA determined that a corresponding chronic benchmark was unnecessary.

The draft permit includes a maximum daily effluent limit of 0.7 mg/l at Outfalls 004, 005, and 008 (no available dilution) and a maximum daily effluent limit of 1.1 mg/l at Outfall 007 (acute dilution factor of 1.5). The draft permit requires daily monitoring of hydrogen peroxide when PEROX-AID® is in use at the facility to confirm that use of PEROX-AID® at the facility does not likely to cause toxicity in the receiving water. The facility monitors residual peroxide using Hach test kit HYP-T #2291700, which has a minimum detection limit of 0.2 mg/l.

6. Nutrients (Nitrogen and Phosphorus)

Phosphorus and nitrogen are the primary nutrient that can promote the growth of nuisance algae and rooted aquatic plants. Typically, elevated levels of nutrients will cause excessive algal and/or plant growth resulting in reduced water clarity, poor aesthetic quality, and impaired aquatic habitat. Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce in-stream dissolved oxygen concentrations to levels that could negatively impact aquatic life and/or produce strong unpleasant odors.

Nutrients are a pollutant of concern in fish hatchery wastewater, and the current permit requires quarterly monitoring of total nitrogen and total phosphorus to provide data to evaluate the impact of these pollutants on the quality of the receiving water. Total nitrogen and total phosphorus concentrations at outfall based on quarterly monitoring (with the exception of monthly total phosphorus monitoring at Outfall 008) from July 2005 through April 2012 are presented in Table 8.

Table 8: Total Nitrogen and Phosphorous Concentrations at Berlin State Fish Hatchery Outfalls between July 2005 and April 2012.

	Total Nitrogen (mg/l)		Total Phosphorus (mg/l)	
	Maximum	**Average**	**Maximum**	**Average**
Outfall 004	1.0	0.27	0.21	0.07
Outfall 005	1.0	0.12	0.18	0.03
Outfall 007	0.7	0.21	0.64	0.08
Outfall 008	0.7	0.14	0.32	0.05

The New Hampshire Surface Water Quality Regulations contain a narrative criterion which states that nutrients contained in effluent shall not impair a water body's designated use. Specifically, Env-Ws 1703.14(b) states that, "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Env-WS 1703.14 further states that, "Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." Cultural eutrophication is defined in Env-Ws 1702.15 as, "…the human-induced addition of wastes containing nutrients which results in excessive plant growth and/or decrease in dissolved oxygen." There are presently no numeric criteria for nitrogen and phosphorus in the NH WQS, but criteria are currently under development by NHDES.

a. Nitrogen

From July 2005 through April 2012, total nitrogen as N at all four outfalls has ranged from non-detectable levels to 1.0 mg/l (Attachment C). The long-term average nitrogen concentration (presented in Table 2, above) is about 0.2 to 0.3 mg/l at Outfalls 007 and 004, respectively, and about 0.1 mg/l at Outfalls 005 and 008. These levels are generally consistent with total nitrogen concentration at other NHF&G hatcheries. As specified above, there are no numeric criteria for total nitrogen. However, the long-term average total nitrogen concentrations in all outfalls is less than 0.4 mg/l, which EPA identified to be representative of streams that are minimally impacted by human activities in the *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Lakes and Reservoirs in Ecoregion VIII* (EPA 2001).

Long Island Sound experiences low levels of dissolved oxygen (hypoxia) that can exceed water quality standards and impair the function and health of the Sound. The low dissolved oxygen levels are linked to excessive human-generated sources of nitrogen, including from the Connecticut River. To protect Long Island Sound and improve water quality conditions, Connecticut and New York have developed a total maximum daily load (TMDL) for Long Island Sound that specifies a 58.5% reduction in nitrogen load from Connecticut and New York and requires additional action to reduce nitrogen loading from sources north of the state of Connecticut, including New Hampshire.[1] Because the receiving waters from the Berlin State Fish Hatchery discharge to the Upper Ammonoosuc River, which joins the Connecticut River near Groveton, NH, EPA considered the nitrogen load from the hatchery with respect to the continued efforts to reduce nitrogen loading in the Connecticut River watershed. The contribution of nitrogen from the hatchery is relatively low (concentrations less than or equal to 1.0 mg/l at each of the outfalls). EPA estimated the mean annual nitrogen load based on the quarterly nitrogen sampling from 2005 through April 2012 to be about 3,865 pounds per year (see Attachment C).[2] In comparison, the mean annual nitrogen load to the Connecticut River at Wells River, VT is 4.47 million pounds per year based on ambient water quality monitoring performed from 2003-2005 by USGS. At this level, the hatchery would comprise about 0.09% of the load without considering attrition of nitrogen during transport from the outfalls to the monitoring site in Wells River, VT. EPA believes that the relatively low contribution of nitrogen from the hatchery, combined with best management practices to reduce the discharge of solids, is consistent with the goals of the TMDL.

For these reasons, EPA does not expect the discharge of nitrogen from the hatchery to impact the water quality of the receiving waters. EPA and NHDES expect that the continued ban on direct discharge of cleaning waters coupled with efficient feed management and feeding strategies will minimize nitrogen discharges from these sources. In addition, the draft permit requires quarterly monitoring of total nitrogen from all outfalls. This monitoring, combined with the addition on

[1] A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound. December 2000. Prepared by New York State Department of Environmental Conservation and Connecticut State Department of Environmental Protection. http://longislandsoundstudy.net/wp-content/uploads/2010/03/Tmdl.pdf

[2] This estimate may be conservative because it is based on extrapolation of the mean total nitrogen load at each outfall from quarterly monitoring data over 365 days. In fact, more than 50% of the samples at all four outfalls were non-detect, suggesting that more than half of the time the discharge of nitrogen from the hatchery's four outfalls is too low to measure.

ammonia as N monitoring described above, will enable EPA and NHDES to confirm that the authorized discharges will not impact the quality of the receiving waters and will continue to be consistent with the goals of the Long Island Sound TMDL.

b. Phosphorus

Phosphorus is the key nutrient controlling productivity and causing excess algal biomass in many freshwaters worldwide. Phosphorus is one the primary macro-nutrients that enrich streams and rivers and cause nuisance levels of algae. Conditions that allow periphyton/plankton biomass to accumulate (e.g., adequate light, optimum current velocity, sufficient water detention time) will not result in high biomass without sufficient nutrient supply. Nutrients, especially P, are frequently the key stimulus to increased algal biomass. Algae are either the direct or indirect cause of most problems related to excessive nutrient enrichment. Chlorophyll-a, a photosynthetic pigment and sensitive indicator of algal biomass, can be used as a biological response variable for nutrient-related problems (EPA 2000).

There are currently no national or New Hampshire state numeric criteria for nutrient levels to control eutrophication in rivers and streams. However, according to EPA's *Quality Criteria for Water 1986* (Gold Book), the recommended total phosphorus concentration at the point of discharge for the prevention of nuisance algal growth is 0.1 mg/l for flowing waters (e.g., Cold Brook, No. 9 Brook, and West Branch Ammunoosuc River) and 0.05 mg/l for discharges directly to lakes and impoundments (e.g., York Pond).

In 2000, as part of an effort to reduce problems associated with excess nutrients in water bodies, EPA released "Ecoregional Nutrient Criteria" (EPA 2000). The criteria, published for specific ecoregions or geographic areas, represent conditions in waters which are minimally impacted by human activities, and thus are representative of waters without cultural eutrophication. The Berlin State Fish Hatchery is located within Ecoregion VIII, Nutrient Poor Largely Glaciated Upper Midwest and Northeast. Recommended rivers and streams criteria for this ecoregion is a total phosphorus criterion of 10 ug/l (0.010 mg/l) and chlorophyll a criteria of 0.63 ug/l (0.00063 mg/l) *(Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII,* EPA 2001). Recommended lakes and reservoirs criteria for this ecoregion is a total phosphorus criterion of 8 ug/l (0.008 mg/l) and chlorophyll a criteria of 2.43 ug/l (0.00243 mg/l) (*Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Lakes and Reservoirs in Ecoregion VIII*, EPA 2001).

i. Outfalls 004, 005, 007

DMRs from July 2005 through April 2012, total phosphorus at Outfalls 004, 005, and 007 have ranged from non-detectable levels to 1.0 mg/l (Attachment C). The DMR data summarized in Table 8 above and presented in Attachment C suggest that the average of the reported maximum daily phosphorus concentrations in the effluent at Outfalls 004, 005, and 007 (0.03 to 0.08 mg/l) are generally less than the recommended Gold Book concentration for flowing waters (0.1 mg/l). At Outfalls 004 and 005, the maximum daily concentration of phosphorus exceeded 0.1 mg/l on one

occasion in March 2012. At Outfall 007, the maximum daily phosphorus concentration at Outfall 007 was greater than the Gold Book level in December 2009 and March 2012.

Because average phosphorus concentrations at Outfall 004, 005, and 007 are generally low and a nutrient issue is not identified for the receiving waters, EPA determined that a numeric phosphorus limit is not necessary at this time. EPA and NHDES expect that the continued ban on direct discharge of cleaning waters coupled with efficient feed management and feeding strategies will minimize phosphorus discharges. However, because elevated phosphorus has been observed on occasion at each outfall, coupled with the lack of dilution in the receiving waters, the draft permit carries forward the quarterly monitoring requirement. This monitoring will enable EPA and NHDES to confirm that the authorized discharges will not impact the quality of the receiving waters.

ii. Outfall 008

Section 303(d) of the CWA requires states to identify those waterbodies that are not expected to meet surface water quality standards after implementation of technology-based controls and thus require the development of total maximum daily loads (TMDL). Impaired water quality conditions in York Pond have resulted in its listing in the State of New Hampshire's Final List of Threatened or Impaired Waters That Require a TMDL (NHDES, 2010), also referred to as the 303(d) list. According to the NHDES 2010 303(d) list, aquatic life and primary contact recreational uses are impaired due to elevated chlorophyll-a, total phosphorus, and cyanobacteria. The sources of the impairments may be, in part, due to the hatchery's discharge at Outfall 008.

EPA's regulation at 40 CFR 122.44(d)(1) establishes the basis for determining if there is an excursion of numeric or narrative water quality criteria. Section (ii) of that regulation states: "When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water."

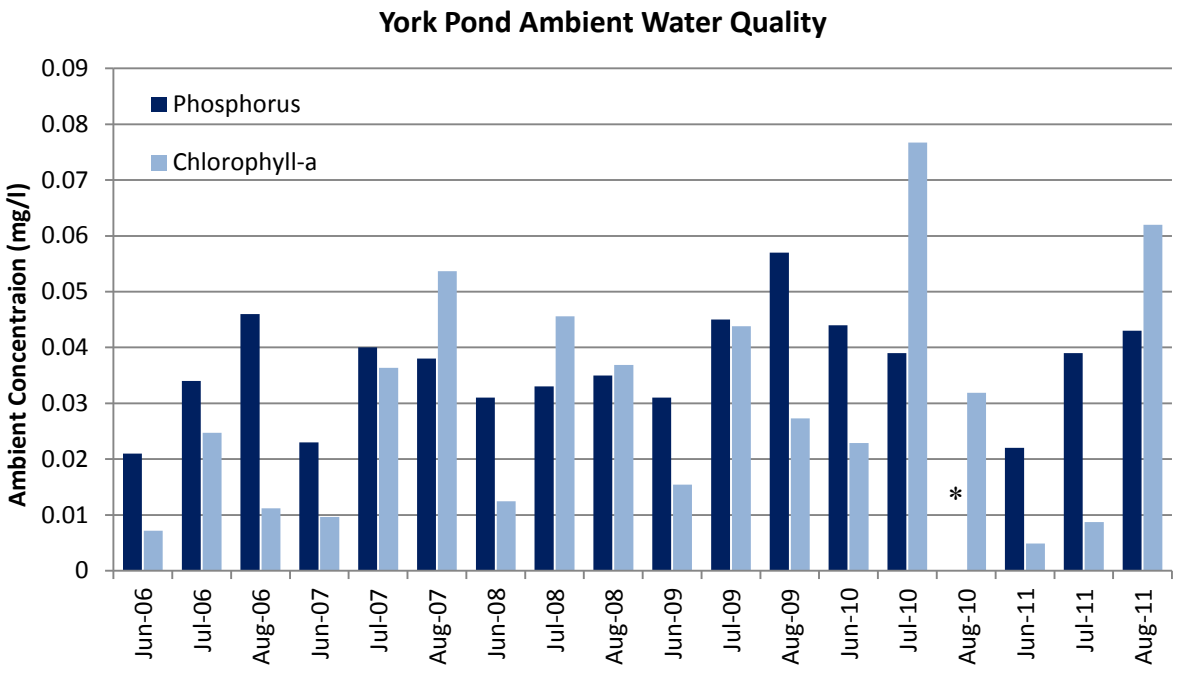
During issuance of the current permit in 2005, EPA identified the discharge of phosphorus to York Pond as a concern given its listing on the 303(d) list. To protect York Pond from further degradation until a TMDL can be completed, EPA required the application of best management practices (BMPs) in combination with a prohibition against the discharge of any cleaning waters from the West Branch raceways via Outfall 008. In addition, the current permit required ambient monitoring in York Pond every June, July, and August beginning in 2006. As established in the 2005 Fact Sheet (p. 21), EPA evaluated total phosphorus and chlorophyll-a levels in York Pond in combination with total phosphorus from effluent sampling at Outfall 008 to determine if the BMPs required in the current permit have successfully minimized chlorophyll-a and phosphorus in the water column.

As presented in Table 8 (above) and Attachment C, total phosphorus at Outfall 008 ranged from 0.01 to 0.32 mg/l with an average of 0.05 mg/l between July 2005 and April 2012. Based on monthly monitoring, the phosphorus concentration in the effluent at Outfall 008 regularly exceeds the

recommended Gold Book level of 0.05 mg/l (about 28% of samples reported), including seven months during the last year of available data (April 2011 through March 2012).

The summer ambient total phosphorus concentration in York Pond ranged from 0.02 mg/l to 0.51mg/l. Over the monitoring period (June, July, and August 2006 to 2011) the average ambient phosphorus concentration was 0.06 mg/l. The maximum concentration of 0.51 mg/l, which occurred in August 2010, was an order of magnitude higher than the next highest sample (0.06 mg/l in August 2009) and it is unclear what may have caused this elevated level. Considering the August 2010 sample an outlier and excluding it from the dataset results in an average phosphorus concentration of 0.04 mg/l. The summer ambient chlorophyll-a level in York Pond ranged from 4.9 µg/l to 76.7 µg/l with an average of 29.5 µg/l between 2006 and 2011. Ambient total phosphorus and chlorophyll-a in York Pond have fluctuated since monitoring began in 2006 but have remained high relative to 2006 levels (Figure 1). In fact, the maximum sample value for both variables occurred in 2010. Based on the ambient and effluent monitoring data, the BMPs implemented during the last permit cycle have not been sufficient to reduce the discharge of phosphorus at Outfall 008 or the excessive chlorophyll-a concentrations in York Pond. As a result, EPA concludes that there is a reasonable potential for the discharge of phosphorus from Outfall 008 to contribute to the impairment of designated uses in York Pond and a numeric phosphorus limit should be established.

Figure 1: Results of ambient water quality sampling in York Pond during June, July, and August from 2006 through 2011.



*August 2010 phosphorus concentration equal to 0.51 mg/l.

EPA has decided to apply the Gold Book criterion rather than the more stringent ecoregional criteria, given that it was developed from an effects-based approach versus the ecoregional criteria that were

developed on the basis of reference conditions. The effects-based approach is taken because it is more directly associated with impairment to a designated use (i.e. fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e. water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. chlorophyll a) associated with designated use impairments. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions. Given the lack of available dilution in York Pond, the draft permit includes a total phosphorus limit equal to the recommended Gold Book value for lakes and impoundments of 0.05 mg/l in addition to continuing the BMPs prohibiting the direct discharge of cleaning waters and mandating efficient feed management and feeding strategies.

In addition to the water quality-based total phosphorus limit, the draft permit includes a mass-based total phosphorus limit for Outfall 008 to further protect York Pond from high phosphorus loads. EPA and NHDES calculated the existing phosphorus load from 2006 through 2011 ranged from 178 lbs per year in 2006 to about 309 lbs/year in 2009. According to NHF&G, the high 2009 loading was due to a broken pipe that was fixed in 2010. EPA and NHDES calculated expected annual total phosphorus load based on the reported average monthly phosphorus load from 2006 to 2011 assuming an average monthly concentration of 0.05 mg/l total phosphorus when the average monthly concentration reported in the DMR exceeded the draft permit limit (Attachment D). Based on this calculation, the draft permit includes a mass-based annual total phosphorus limit of 190 lbs/year. The combination of concentration- and mass-based total phosphorus limits in the draft permit will maintain or improve existing conditions in York Pond until NHDES can complete a total maximum daily load for this waterbody.

7. Dissolved Oxygen

The NH Standards require that the instream dissolved oxygen content be at least 75 % of saturation, based on a daily average, and that the instantaneous minimum dissolved oxygen concentration be at least 5 mg/l for Class B waters. See Env-Wq 1703.07(b).

Given that effluent flows from the hatchery make up the majority of the receiving stream flows during summer low-flow periods, low DO concentrations in the effluent could result in violations of New Hampshire's in-stream dissolved oxygen requirements at Env-Wq 1703.07, particularly if oxygen demand from effluent BOD_5 is significant. Minimum dissolved oxygen levels between July 2005 and April 2012 at all four outfalls was not less than 7.2 mg/l. Dissolved oxygen saturation was less than the water quality standard of 75% (Env-Wq 1703.07(b)) on two occasions at Outfall 004 (August 2010 and August 2011) when the reported value was between 74% and 75%. Formalin was not in use at the hatchery when percent saturation was less than 75%.

The draft permit continues to require monthly monitoring of the effluent for dissolved oxygen concentration and also requires additional monitoring at all times when formalin is being used. The draft permit further requires that the percent saturation be calculated from the dissolved oxygen concentration to determine if the discharge causes or contributes to exceeding that part of the NH Standards.

8. 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 harm 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 will only allow its use 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.

Existing toxicity data indicates that formalin is toxic to aquatic organisms at concentrations below FDA labeling guidelines. Currently there are no acute and chronic aquatic-life criteria for either formalin or formaldehyde in the NH Standards. However, New Hampshire law states that, "all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life" (N.H. RSA 485-A:8, VI and Env-Wq 1703.21(a)(1)). EPA, therefore, will continue to apply the acute, 4.6 mg/l, and chronic, 1.6 mg/l, aquatic-life criteria taken from the Derivation of Ambient Water Quality Criteria for Formaldehyde, Hohreiter, David W. and Rigg, David K., Journal of Science for Environmental Technology in Chemosphere, Vol. 45, Issues 4-5, November 2001, pgs. 471-486. EPA believes that because these criteria were developed in accordance with EPA's Guidance for Deriving Numerical *National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, they are appropriate for the purpose of setting effluent limitations.

Additionally, the maximum daily (acute) limit, 4.6 mg/l, and average monthly (chronic) limit, 1.6 mg/l, aquatic-life criteria for formaldehyde are carried forward from the present permit to the draft permit in accordance with the antibacksliding requirements found in 40 C.F.R. § 122.44(1) since the permittee has been able to achieve consistent compliance with these limits. This means that for Outfalls 004, 005 and 008 where the available dilution in the receiving water is 1.0, the maximum daily and average monthly limits of 4.6 and 1.6 mg/l. For Outfall 007 where the dilution is available, the maximum daily and average monthly limits are 6.9 mg/l (acute dilution factor of 1.5) and 3.8 mg/l (chronic dilution factor of 2.4). These limits apply at all times, but the monitoring requirements in the draft permit are "when-in-use," since formalin is only used sparingly throughout the year. During the course of the present permit, formaldehyde was not discharged at Outfall 005, 007 and 008. The hatchery has expressed interest in discontinuing the use of formalin in favor of Chloramine-T and/or PEROX-AID®, and the draft permit includes numeric limits for the pollutants associated with these chemicals.

9. Best Management Practices (BMPs)

The ELGs contained in 40 C.F.R. § 451.11 are narrative limitations that describe BMPs to which the facility must adhere (see discussion in Section V.1 of this Fact Sheet). These practices 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.

Three additional BMP Plan categories included in the current permit based on EPA's BPJ authority have been carried over to the draft permit consistent with the antibacksliding regulations found in 40 C.F.R. § 122.44(l). The categories are: (1) detailing precautions taken to prevent aquatic organisms that are neither indigenous nor naturalized to New Hampshire waters from becoming established in local surface waters; (2) identifying and quantifying all aquaculture drugs and chemicals used at this facility; and (3) describing where settled solids are placed after removal from culture units. The EPA has retained these three additional requirements because they will continue to protect the receiving waters from release of non-indigenous species and characterize the use of aquaculture drugs and chemicals in the treatment of pathogens and their potential for discharge to the environment.

Further, based on antibacksliding regulations found in 40 C.F.R. § 122.44(l), EPA has retained the current permit's BPJ determination to prohibit the direct discharge of settled solids from active rearing units to receiving water absent any form of off-line settling or equivalent solids removal. This requirement is based on the BMP plan requirement, stipulated in 40 C.F.R. § 451.11(a)(2), that requires the permittee to implement procedures for the routine cleaning of rearing units and off-line settling basins to minimize the discharge of accumulated solids from settling ponds and basins and production systems.

10. Additional Requirements and Conditions

The effluent monitoring requirements in the draft permit, as shown in the following table, have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 C.F.R. §§§ 122.41(j), 122.44(i) and 122.48. It is the intent of EPA and NHDES-WD to establish minimum monitoring frequencies in all NPDES permits at the time of permit modification and/or reissuance that sufficiently monitor the effluent discharge so both the environment and human health are protected. Compliance monitoring frequency and sample type has been established after considering the intended purpose and use of the data, configuration of the physical plant including its flow, and feeding regimes at the hatchery.

The remaining conditions of the permit are based on the NPDES regulations 40 C.F.R., Parts 122 through 125, and consist primarily of management requirements common to all permits.

Table 9: Current and Draft Permit Comparison

M- Monitor Only, L-Limited

Parameter	CURRENT PERMIT		DRAFT PERMIT	
	Sampling Frequency	**Sample Type**	**Sampling Frequency**	**Sample Type**
Flow (M)	1/Week	Weir/ Calculation	1/Week	Flow meter or weir calculation
pH (L)	1/Week	Grab	1/Week	Grab
BOD_5[1] (M)	1/Quarter	24-Hour Composite/Grab	1/Quarter	24-Hour Composite/Grab
TSS[1] (M)	1/Quarter	24-Hour Composite/Grab	1/Quarter	24-Hour Composite/Grab
Total Nitrogen as N[1] (M)	1/Quarter	24-Hour Composite/Grab	1/Quarter	24-Hour Composite/Grab
Total Ammonia as N (M)	**Not Required**	**Not Required**	**1/Quarter**	**24-Hour Composite/ Grab**
Total Phosphorus as P[1] (M/L)	1/Quarter	24-Hour Composite	**1/Quarter or 1/Month[2]**	**24-Hour Composite/ Grab**
Total Residue Chlorine (TRC) (L) (When in Use)	**Not Required**	**Not Required**	**1/Day**	**Grab**
Hydrogen Peroxide (L) (When Chloramine-T in Use)	**Not Required**	**Not Required**	**1/Day**	**Grab**
Dissolved Oxygen (M) (Formalin Absent)	1/Month	Grab	1/Month	Grab
Dissolved Oxygen Saturation (M) (Formalin Absent)	1/Month	Calculation	1/Month	Calculation
Water Temperature (M) (Formalin Absent)	1/Month	Grab	1/Month	Grab
Formaldehyde (L) (Formalin Present)	1/Week	Grab	1/Week	Grab

Dissolved Oxygen (M) (Formalin Present)	1/Week	Grab	1/Week	Grab
Fish Biomass on Hand [3] (M)	Monthly	Calculation	Monthly	Calculation
Fish Feed Used[2] (M)	Monthly	Calculation	Monthly	Calculation
Efficiency of Fish Feed Used[3] (M)	Monthly	Calculation	Monthly	Calculation

[1] 24-hour composite sampling for TSS, BOD5, Total Phosphorous and Total Nitrogen is required only at Outfall 008. This is because the overflow water from the West Branch Raceways does not discharge to a settling pond; instead discharges directly to York Pond. In order to more accurately monitor the concentrations of pollutants from the West Branch Raceways a longer sampling period is employed. Since effluent from Outfalls 004, 005, and 007 flows to settling ponds for treatment before discharging to the receiving waters, grab samples are sufficient to monitor pollutant concentration levels.

[2]Quarterly monitoring of total phosphorus is required for Outfalls 004, 005, and 007. Monthly monitoring of total phosphorus is required at Outfall 008.

[3] Reporting of fish biomass on hand, fish feed used, and feeding efficiency is only required for Outfalls 004, 005, and 008.

VII. Endangered Species Act

The Endangered Species Act (16 USC 1451 et seq) requires the EPA ensure that any action authorized by the EPA is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat. Further, 40 CFR 122.49(c) requires the EPA to consult with the U.S. Fish and Wildlife Service (USFWS) to determine particular permit conditions when the regulations of the Endangered Species Act may apply.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, or plants to see if any such listed species might potentially be impacted by the reissuance of this NPDES permit. According to the New Hampshire Natural Heritage Bureau's *Rare Plants, Rare Animals, and Exemplary Natural Communities in New Hampshire Towns* (January 2012), there are no federally endangered or threatened species likely to occur in the vicinity of the receiving waters. Further consultation under Section 7 of the ESA with USFWS is not required at this time. During the public comment period, EPA has provided a copy of the draft permit and Fact Sheet to USFWS.

VIII. 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 Service (NMFS) if EPA's action or proposed actions that it funds, permits, or

undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b). The Amendments broadly define essential fish habitat (EFH) as: "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. 50 C.F.R. § 600.910(a).

EFH is only designated for fish 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.

EFH Species

The Connecticut River and its tributaries, including the Upper Ammonoosuc River, are designated essential fish habitat (EFH) for Atlantic salmon (*Salmo salar*). The permit limitations and requirements in the draft permit as discussed in the Fact Sheet are designed to protect aquatic species; therefore, this authorized discharge is not likely to adversely affect the federally managed species, their forage, or their habitat in the receiving water. This is particularly true given that the direct discharge of settled solids from active rearing units to receiving waters absent any form of off-line settling or equivalent solids removal has been prohibited and the discharges of formalin, total residual chlorine, and hydrogen peroxide are being regulated to assure that no toxics in toxic amounts are being released to the receiving water.

EPA considers the conditions in the draft permit to be sufficient to protect the EFH species of concern, namely Atlantic salmon; therefore, further mitigation is not warranted at this time. If adverse effects do occur in the receiving water as a result of this permit action, or if new information becomes available that changes the basis for this conclusion, then NMFS will be notified and consultation will be promptly initiated. During the public comment period, EPA has provided a copy of the Draft Permit and Fact Sheet to NMFS.

IX. Monitoring and Reporting

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

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

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

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit 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 C.F.R. § 122.41 and § 403.12. NetDMR is accessed from the following url: http://www.epa.gov/netdmr. Further information about NetDMR, including contacts for EPA Region 1, is provided on this website.

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

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

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

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

X. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate State Water Quality Standards or the Agency waives its right to certify as set forth in 40 C.F.R. § 124.53. The NHDES is the certifying authority within the State of New Hampshire. EPA has discussed this draft permit with staff at the NHDES and anticipates that the draft permit will be certified by the State.

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

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

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to John Paul King; U.S. EPA; Office of Ecosystem Protection; Industrial Permits Branch (OEP 06-1), 5 Post Office Square, Suite 100; Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the draft permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

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

XII. EPA Contact

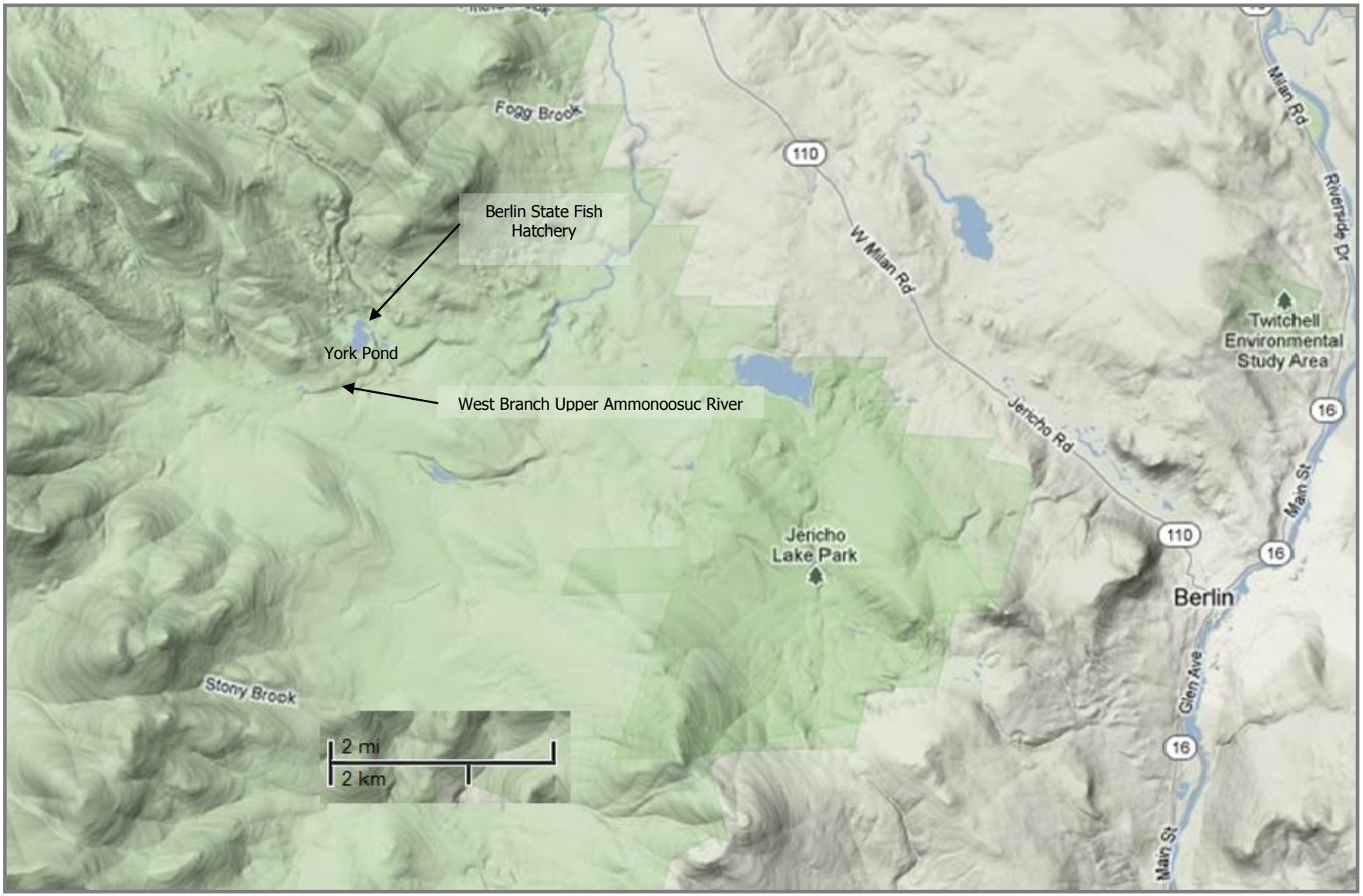
Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

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

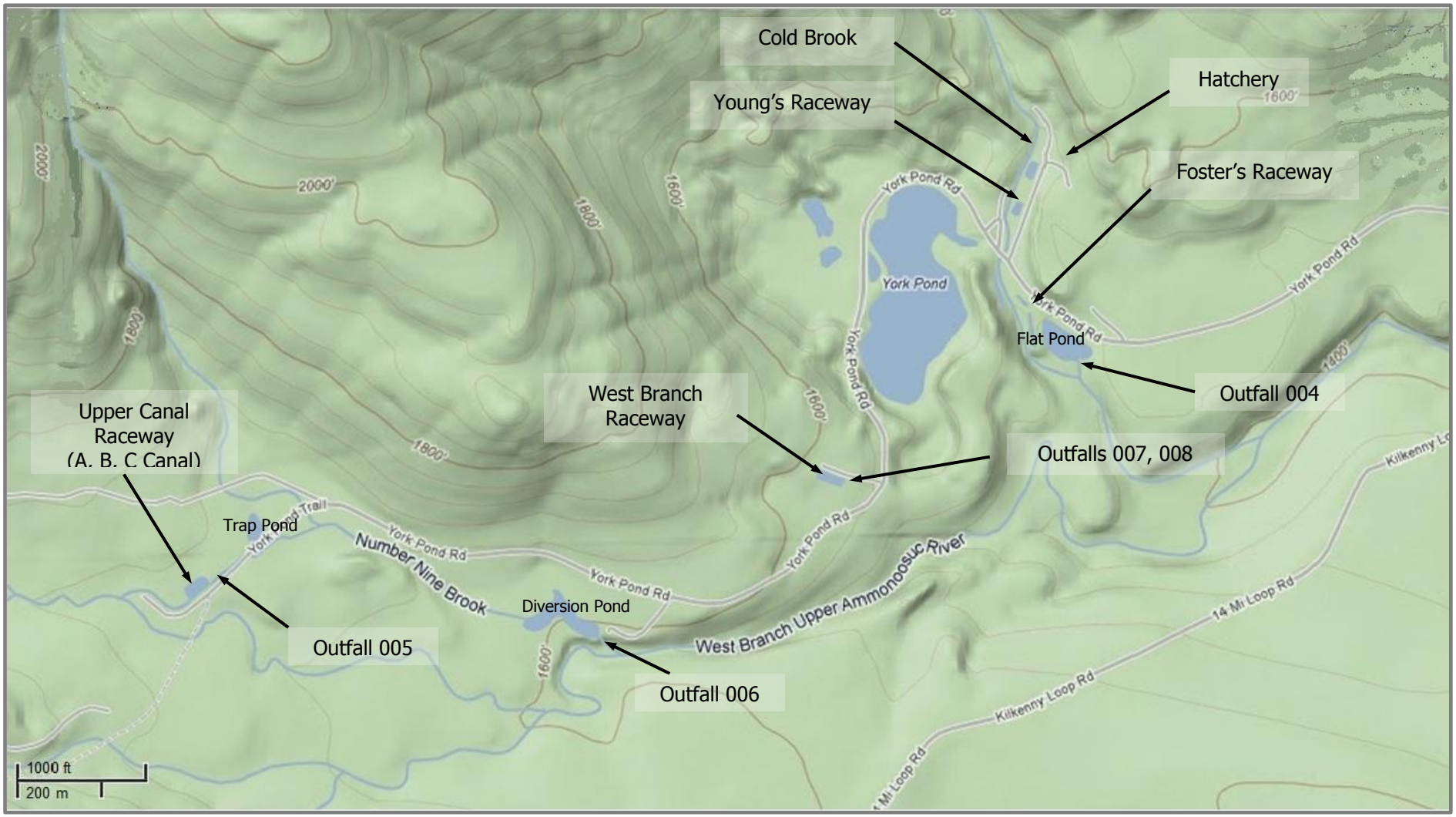
Date: December 19, 2012

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

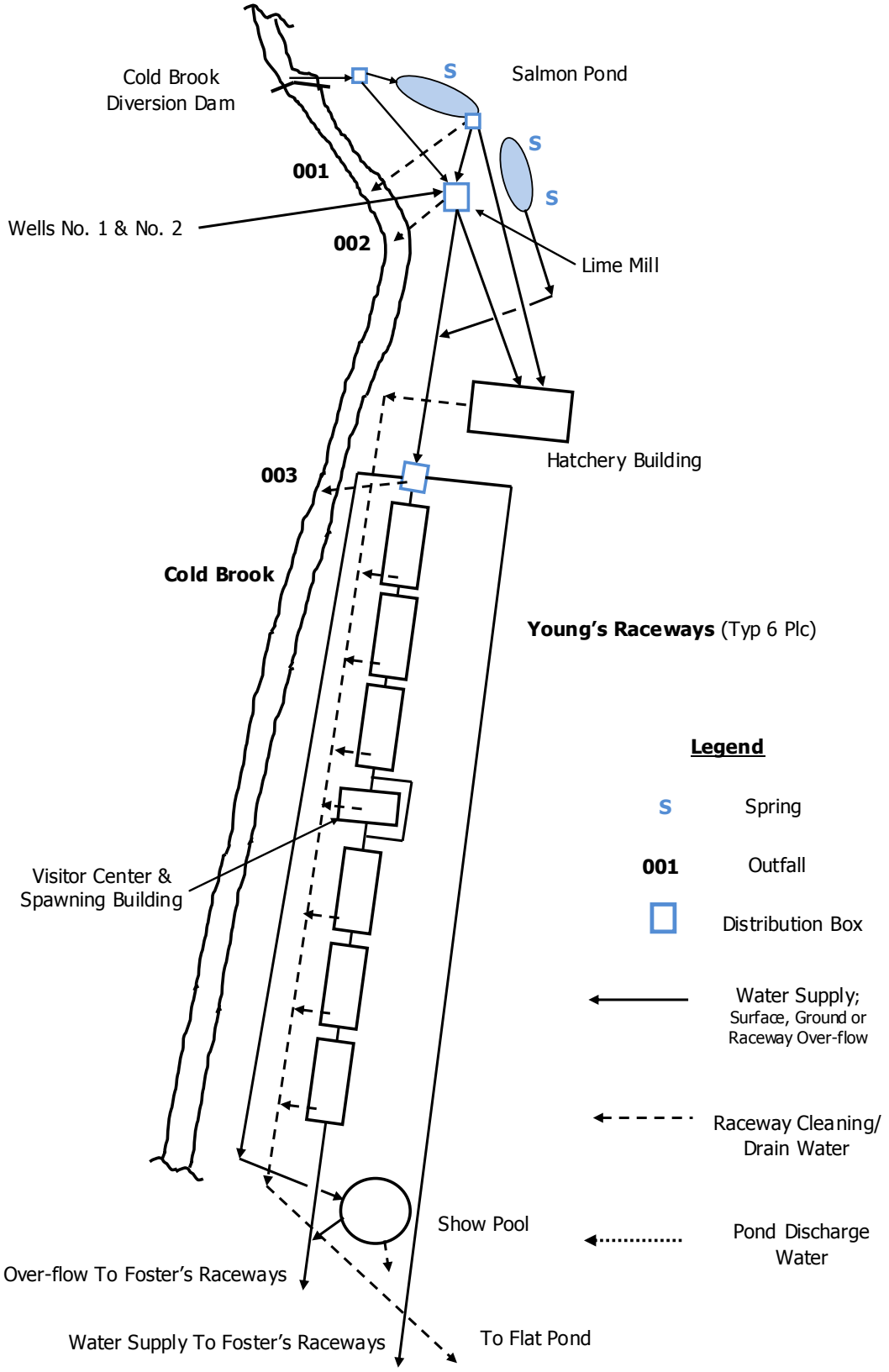
Attachment A
Map Location of Berlin Fish Hatchery



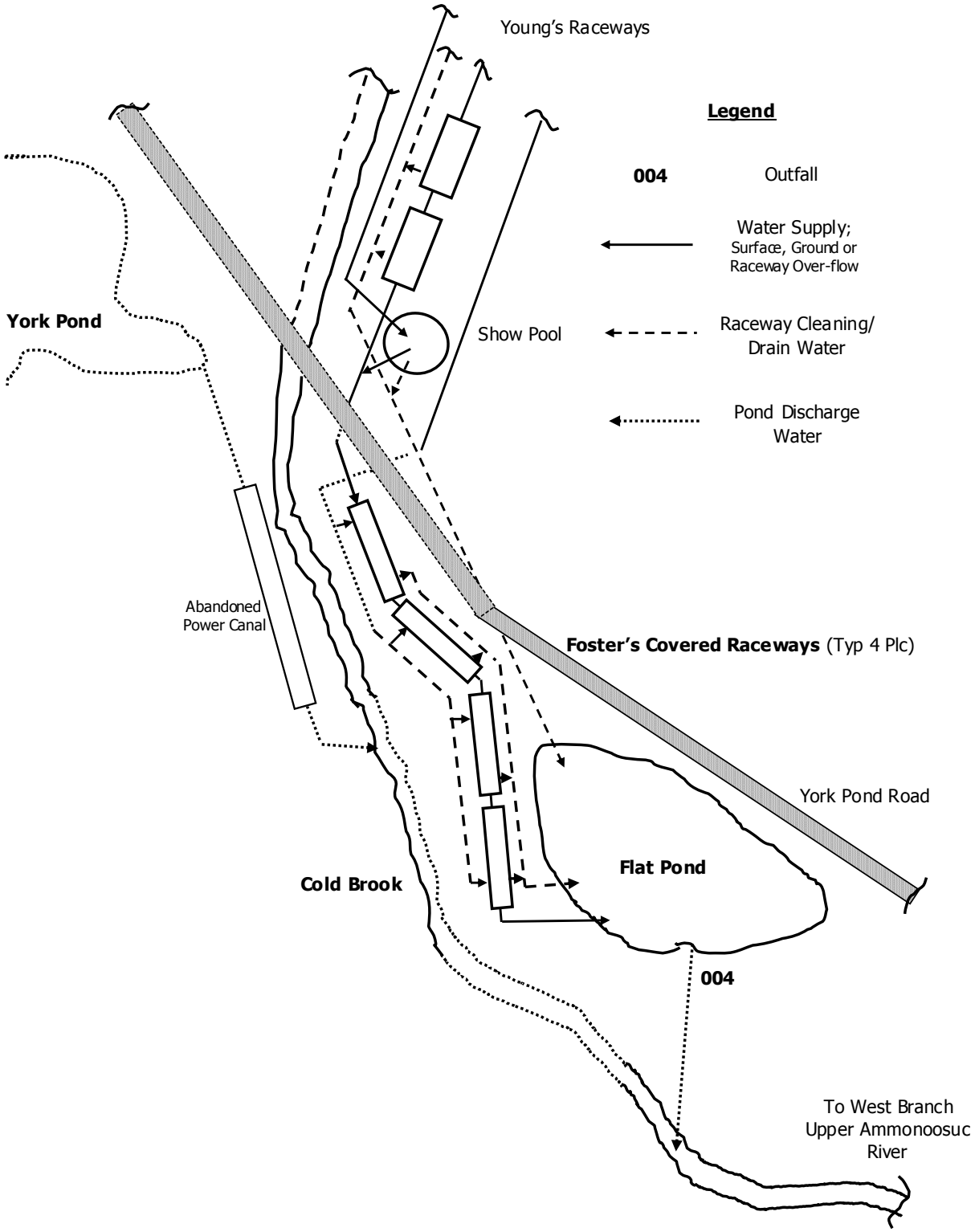
Attachment A (cont.)
Location of Berlin Fish Hatchery Outfalls & Structures



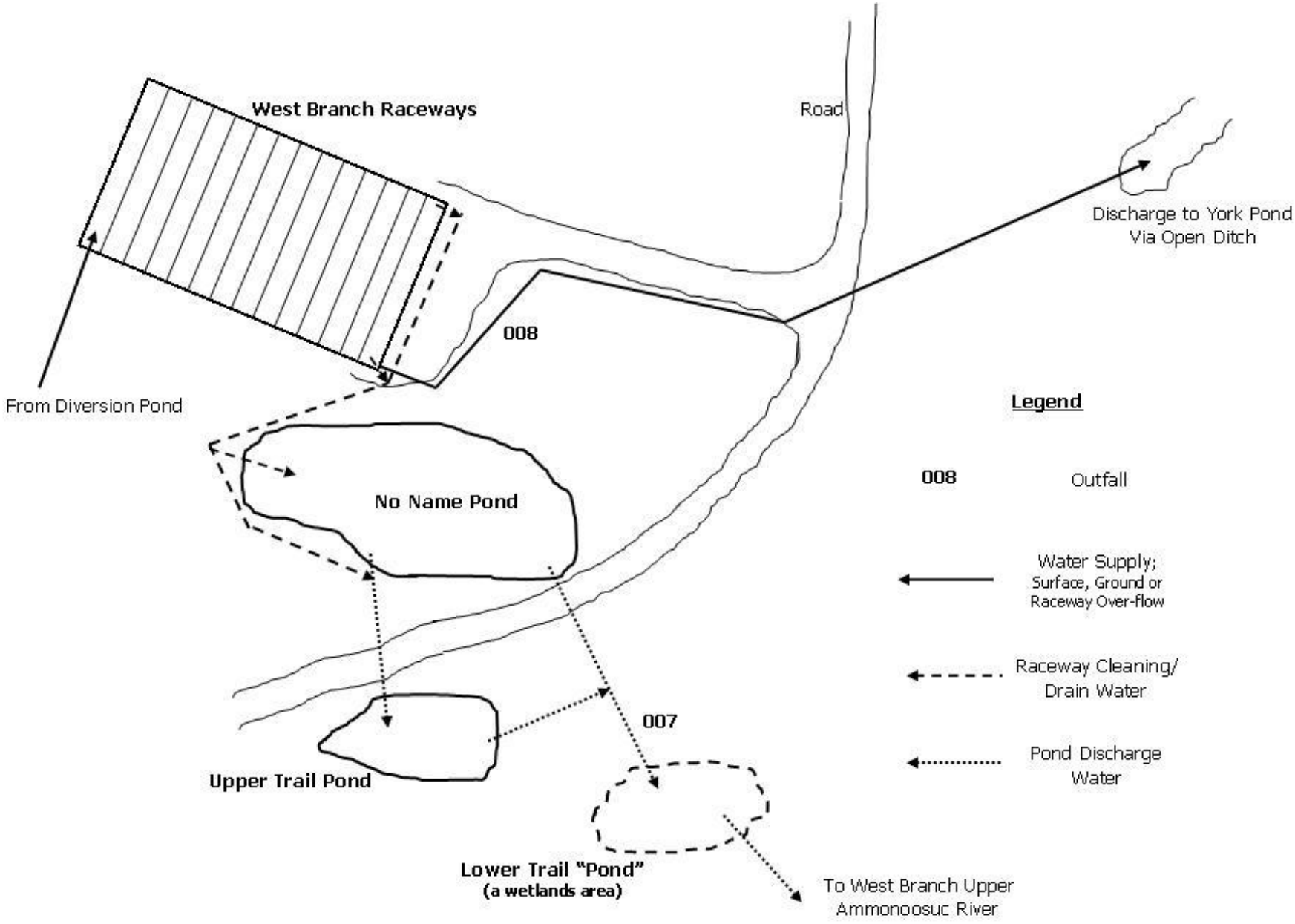
Attachment B
Flow Diagram: Young's Raceways



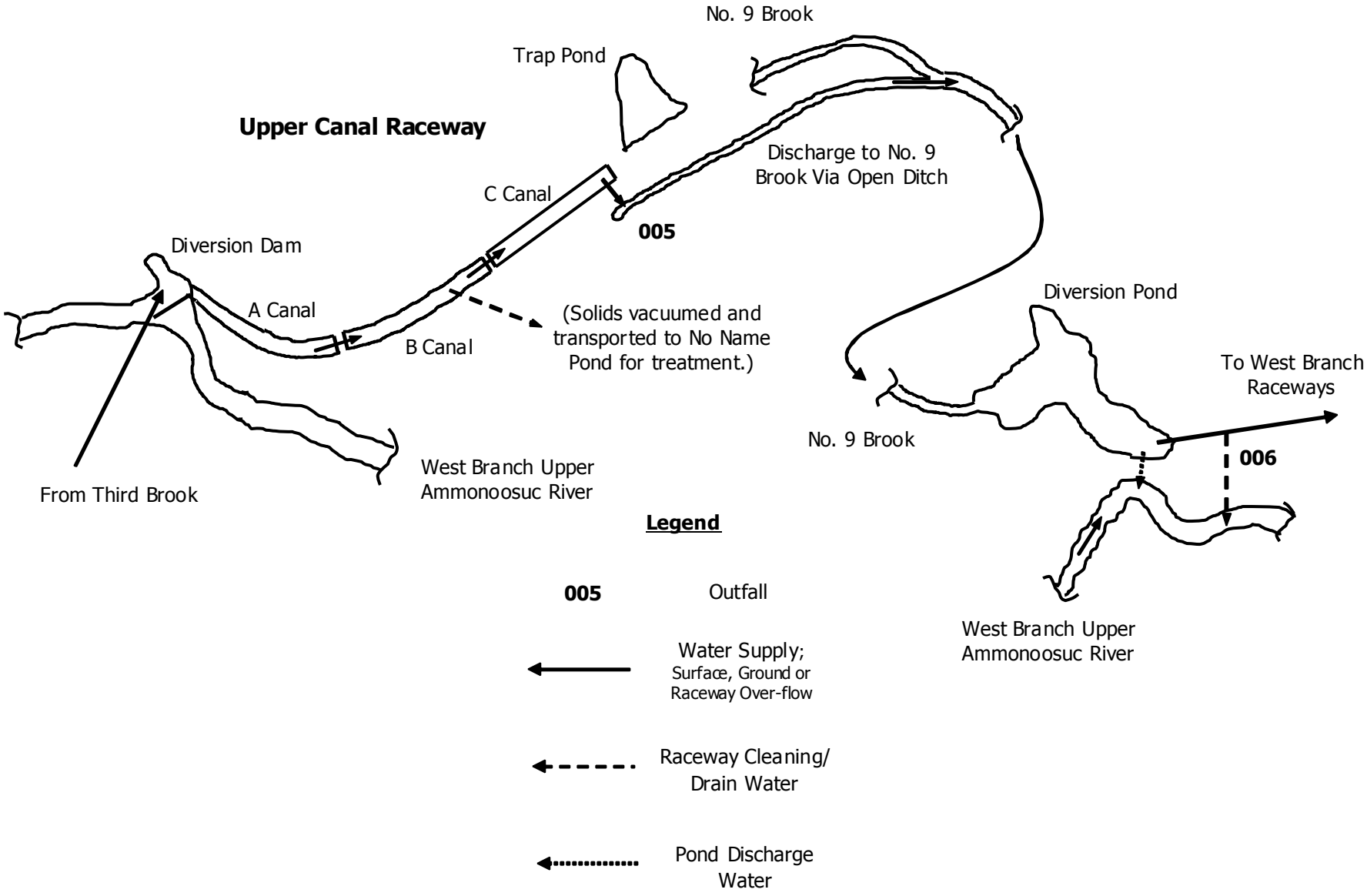
Attachment B
Flow Diagram: Foster's Covered Raceways



Attachment B
Flow Diagram: West Branch Raceways



Attachment B
Flow Diagram: Upper Canal Raceway



Attachment C
DMR Summary

Table C-1. Summary of DMR data from July 2005 through April 2012 collected on a weekly or monthly basis.

		Food[1]	Fish on Hand[1]	Flow	DO	% DO	pH		Temp	Formaldehyde[2]
		Mo Avg	Mo Avg	Daily Max	Daily Min	Daily Min	Min Daily	Daily Max	Daily Max	Daily Max
		lbs/day	lbs/day	MGD	mg/l		S.U.		deg F	mg/l
Outfall 004	MIN	62.23	100.75	0.90	7.24	74.30	5.22	6.01	38.3	0.00
	MAX	286.00	1447.34	2.30	14.20	129.10	7.13	7.93	75.56	0.95
	AVG	*148.23*	*781.08*	*1.37*	*10.93*	*93.71*	*6.27*	*6.79*	*52.59*	*0.35*
Outfall 005	MIN	0.00	0.00	2.40	8.11	90.90	5.24	6.27	32.00	
	MAX	102.67	1187.95	6.30	16.05	116.70	6.89	7.82	68.36	
	AVG	*40.72*	*356.01*	*4.14*	*12.46*	*98.83*	*6.22*	*6.77*	*48.31*	
Outfall 007	MIN			0.05	7.58	83.10	5.49	6.22	32.36	
	MAX			1.50	15.96	114.20	6.85	7.79	71.24	
	AVG			*0.60*	*12.29*	*97.71*	*6.21*	*6.71*	*49.09*	
Outfall 008	MIN	1.03	0.00	0.80	7.66	79.10	5.64	6.33	32.00	
	MAX	267.84	1966.04	2.60	15.72	122.10	6.81	7.69	71.24	
	AVG	*104.90*	*1140.65*	*1.70*	*12.17*	*97.42*	*6.26*	*6.70*	*49.30*	

[1] Food fed per day and Fish on hand are reported for Young's Raceways and Foster's Covered Raceways (Outfall 004), A,B,C Canal Raceways (Outfall 005), and the West Branch Raceways (Outfall 008). Outfall 007 discharges only cleaning water from the West Branch Raceways.

[2] There was no discharge of formaldehyde at Outfalls 005, 007, or 008 between July 2005 and July 2011.

Table C-2. Summary of DMR data from July 2005 through April 2012 for parameters collected on a quarterly basis, with the exception of total Phosphorus at Outfall 008, which was collected monthly.

		BOD_5		Total Nitrogen		Total Phosphorus		TSS	
		Daily Max		Daily Max		Daily Max		Daily Max	
		lb/d	mg/l	lb/d	mg/l	lb/d	mg/l	lb/d	mg/l
Outfall 004	MIN	0.00	0.00	0.00	0.00	0.23	0.02	0.00	0.00
	MAX	35.00	3.00	11.68	1.00	2.09	0.21	42.53	3.00
	AVG	*3.27*	*0.31*	*3.14*	*0.27*	*0.81*	*0.07*	*5.01*	*0.41*
Outfall 005	MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MAX	150.00	3.00	33.36	1.00	5.11	0.18	100.00	3.00
	AVG	*12.82*	*0.31*	*4.47*	*0.12*	*1.11*	*0.03*	*12.52*	*0.33*
Outfall 007	MIN	0.00	0.00	0.00	0.00	0.07	0.02	0.00	0.00
	MAX	25.00	3.00	4.17	0.70	0.76	0.64	16.68	2.00
	AVG	*2.03*	*0.28*	*0.84*	*0.21*	*0.24*	*0.08*	*2.63*	*0.38*
Outfall 008	MIN	0.00	0.00	0.00	0.00	0.11	0.01	0.00	0.00
	MAX	79.00	5.00	9.92	0.70	4.54	0.32	47.00	3.00
	AVG	*10.91*	*0.77*	*2.14*	*0.14*	*0.71*	*0.05*	*8.12*	*0.56*

Table C-3. Reported monthly data for Outfall 004 from July 2005 through April 2012.

	Food	Fish	Flow	Formaldehyde		DO	% DO	pH		Temperature
	lbs/day	lbs/day	MGD	mg/l	mg/l	mg/l		S.U.		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Mo Avg	Daily Max	Daily Min	Daily Min	Minimum	Maximum	Daily Max
7/31/2005	180.90	472.00	1.70			8.54	89.10	6.45	7.18	65.50
8/31/2005	242.00	734.00	1.00			8.46	90.80	6.71	7.29	67.64
9/30/2005	254.90	785.90	1.00			10.12	97.60	6.16	6.95	62.24
10/31/2005	97.73	572.51	1.00			10.78	98.80	5.75	7.09	52.88
11/30/2005	62.23	560.29	1.38	0.00	0.00	13.36	109.30	5.89	6.34	45.68
12/31/2005	73.94	630.75	1.40			11.83	90.10	6.18	6.39	38.66
1/31/2006	85.36	698.22	1.20			11.84	89.90	5.34	6.20	39.20
2/28/2006	97.87	871.61	1.00	0.84	0.84	12.35	94.10	6.26	6.54	40.82
3/31/2006	117.70	878.29	1.10			12.76	103.70	6.15	6.52	43.88
4/30/2006	112.00	735.44	1.30			12.22	102.10	6.20	6.52	47.84
5/31/2006	86.77	448.84	1.50			11.44	94.70	6.32	6.50	51.44
6/30/2006	111.55	499.12	1.40			9.80	96.20	6.23	6.48	63.14
7/31/2006	199.35	743.99	1.60			9.24	117.70	6.31	6.61	71.06
8/31/2006	278.67	922.92	1.70			7.54	78.90	6.47	7.20	68.90
9/30/2006	252.01	1265.14	1.60			8.90	81.70	6.41	7.25	63.68
10/31/2006	136.18	699.47	1.40			10.32	82.20	6.38	6.66	53.06
11/30/2006	80.91	718.26	1.60			13.54	104.50	6.26	6.69	48.20
12/31/2006	84.47	705.03	1.40	0.56	0.56	11.82	91.20	6.11	6.39	43.16
1/31/2007	102.67	893.48	1.20			11.90	91.00	6.07	6.68	38.66
2/28/2007	91.54	972.64	1.00			12.22	87.60	5.89	6.52	38.84
3/31/2007	108.97	100.75	1.00			12.71	100.10	5.83	7.23	40.82
4/30/2007	129.67	988.77	0.90			12.86	111.20	6.04	6.47	48.38
5/31/2007	144.39	658.77	1.30			13.92	124.70	6.35	6.62	58.46
6/30/2007	157.94	821.08	1.40			9.98	100.70	6.13	6.59	67.10
7/31/2007	194.68	577.12	1.30			8.36	79.00	6.56	7.93	69.44
8/31/2007	242.42	801.01	1.60	0.27	0.27	8.34	82.10	6.37	7.53	72.68
9/30/2007	192.24	627.64	1.60			8.08	79.80	6.46	7.80	64.22
10/31/2007	106.72	230.91	1.60			9.54	88.00	6.13	6.81	55.94
11/30/2007	95.39	632.28	1.20			11.64	85.50	5.74	6.18	42.26
12/31/2007	106.15	737.70	1.20			12.24	93.70	5.22	6.42	38.30

	Food	Fish	Flow	Formaldehyde		DO	% DO	pH		Temperature
	lbs/day	lbs/day	MGD	mg/l	mg/l	mg/l		S.U.		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Mo Avg	Daily Max	Daily Min	Daily Min	Minimum	Maximum	Daily Max
1/31/2008	130.55	937.53	1.20	0.95	0.95	14.20	104.50	6.02	6.45	40.28
2/29/2008	131.79	1051.10	1.30			11.67	98.20	6.03	6.53	40.82
3/31/2008	132.52	1088.86	1.30			12.44	96.00	6.58	7.04	40.28
4/30/2008	150.31	982.57	1.00			11.79	106.40	6.64	7.16	54.68
5/31/2008	137.48	722.64	1.10			12.69	106.30	6.29	6.98	59.00
6/30/2008	179.48	820.67	1.10			8.26	85.10	6.23	6.68	70.52
7/31/2008	226.15	772.00	1.30			7.72	84.50	6.94	7.30	75.56
8/31/2008	254.57	596.02	1.40	0.00	0.00	7.29	78.60	6.11	7.27	63.50
9/30/2008	170.12	689.03	1.40			8.55	84.60	6.48	6.82	63.14
10/31/2008	97.01	614.63	1.60			11.07	90.20	6.11	6.64	52.88
11/30/2008	64.99	609.23	1.30			11.65	91.20	6.44	6.62	48.38
12/31/2008	75.21	651.98	1.20	0.45	0.45	13.35	97.80	6.27	6.54	39.56
1/31/2009	111.66	832.37	1.20			10.45	84.70	6.26	6.47	39.20
2/28/2009	108.70	924.14	1.10			11.65	89.10	6.26	6.91	39.02
3/31/2009	117.15	990.32	0.90			12.95	102.20	6.06	6.85	43.16
4/30/2009	136.31	808.66	1.10			11.91	102.20	6.16	6.73	51.08
5/31/2009	120.69	536.84	1.60			12.51	103.80	6.40	6.81	51.62
6/30/2009	202.31	764.55	1.90			11.12	103.60	6.68	6.89	59.90
7/31/2009	254.85	712.89	1.70			10.31	88.20	6.18	6.54	60.98
8/31/2009	286.00	826.35	1.50			8.81	94.10	6.23	6.50	65.48
9/30/2009	225.56	799.25	1.30			8.22	78.20	6.14	6.83	62.24
10/31/2009	152.50	870.60	1.40			11.35	91.20	6.02	6.64	48.20
11/30/2009	138.22	956.14	1.30			10.11	80.90	6.10	6.35	42.62
12/31/2009	103.16	766.87	1.10			10.21	77.70	6.34	6.52	43.16
1/31/2010	123.83	967.14	1.20			12.66	86.70	6.32	6.54	39.20
2/28/2010	124.81	1087.92	0.90			10.86	81.90	6.03	6.42	39.02
3/31/2010	127.09	1132.45	1.00	0.00	0.00	12.40	96.30	6.37	6.63	42.08
4/30/2010	148.29	776.39	1.20			13.35	108.30	6.37	6.76	48.74
5/31/2010	112.58	561.00	1.60			12.30	122.10	6.47	6.83	62.06
6/30/2010	152.92	693.69	1.70			12.91	120.20	6.67	7.11	60.98
7/31/2010	222.26	721.05	1.60			8.11	85.90	7.13	7.91	68.54
8/31/2010	233.01	818.60	2.30			7.35	74.90	6.76	7.87	69.26

	Food	Fish	Flow	Formaldehyde		DO	% DO	pH		Temperature
	lbs/day	lbs/day	MGD	mg/l	mg/l	mg/l		S.U.		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Mo Avg	Daily Max	Daily Min	Daily Min	Minimum	Maximum	Daily Max
9/30/2010	273.54	1400.74	2.20			9.63	93.30	6.71	7.17	68.54
10/31/2010	235.31	1447.34	2.00			9.08	76.90	6.24	6.81	56.12
11/30/2010	110.75	662.59	1.90			10.82	87.40	6.34	6.57	45.14
12/31/2010	112.51	744.97	1.40	0.43	0.43	11.52	88.00	6.17	6.63	49.10
1/31/2011	128.99	943.87	1.10			10.52	80.10	6.42	6.58	39.56
2/28/2011	129.74	1070.42	1.10			11.26	86.10	6.11	6.54	39.56
3/31/2011	152.72	1097.64	1.30			12.23	96.50	6.26	6.56	43.16
4/30/2011	161.72	904.57	1.30			12.03	96.20	6.05	6.85	50.54
5/31/2011	133.28	654.40	1.50			13.92	129.10	6.36	6.59	54.32
6/30/2011	162.37	694.32	2.10			12.36	124.40	6.00	6.49	64.40
7/31/2011	172.09	543.16	1.60			7.68	84.00	6.18	7.57	68.18
8/31/2011	219.61	751.61	1.50			7.24	74.30	6.27	7.30	66.56
9/30/2011	200.97	674.82	1.60	0.00	0.00	9.16	89.60	6.27	7.39	59.90
10/31/2011	128.93	661.24	1.80			10.02	87.10	6.09	6.77	56.30
11/30/2011	90.28	725.73	1.40			12.32	98.40	6.51	6.21	45.68
12/31/2011	89.26	721.45	1.50			12.06	91.30	6.76	6.18	41.00
1/31/2012	113.43	914.60	1.30			11.66	87.90	6.30	7.71	38.66
2/29/2012	125.09	1048.33	1.10			12.81	87.00	6.61	6.01	39.20
3/31/2012	134.08	848.14	1.20			12.15	99.70	6.35	6.59	48.02
4/30/2012	100.98	471.38	1.40				95.00	6.68	6.55	50.90

Table C-4. Reported quarterly daily maximum values for Outfall 004 from July 2005 through April 2012.

	BOD		Nitrogen		Phosphorus		TSS	
Date	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l
9/30/2005	25.00	3.00	5.84	0.70	0.92	0.11	16.68	2.00
12/31/2005	35.00	3.00	5.80	0.50	0.23	0.02	23.00	2.00
3/31/2006			4.60	0.50	0.27	0.03	18.00	2.00
6/30/2006	0.00	0.00	0.00	0.00	0.63	0.05	0.00	0.00
9/30/2006	0.00	0.00	8.00	0.60	1.07	0.08	0.00	0.00
12/31/2006	0.00	0.00	0.00	0.00	0.53	0.04	0.00	0.00
3/31/2007	0.00	0.00	0.00	0.00	0.58	0.07	0.00	0.00
6/30/2007	0.00	0.00	0.00	0.00	0.43	0.04	0.00	0.00
9/30/2007	0.00	0.00	0.00	0.00	0.67	0.05	0.00	0.00
12/31/2007	0.00	0.00	0.00	0.00	0.60	0.06	0.00	0.00
3/31/2008	0.00	0.00	0.00	0.00	0.54	0.05	0.00	0.00
6/30/2008	0.00	0.00	0.00	0.00	0.55	0.06	0.00	0.00
9/30/2008	0.00	0.00	11.68	1.00	1.28	0.11	0.00	0.00
12/31/2008	0.00	0.00	0.00	0.00	0.33	0.03	0.00	0.00
3/31/2009	0.00	0.00	0.00	0.00	0.64	0.07	0.00	0.00
6/30/2009	0.00	0.00	9.50	0.60	1.58	0.10	0.00	0.00
9/30/2009	0.00	0.00	7.59	0.70	0.99	0.09	0.00	0.00
12/31/2009	0.00	0.00	9.11	0.78	0.67	0.06	0.00	0.00
3/31/2010	0.00	0.00	0.00	0.00	0.75	0.09	0.00	0.00
6/30/2010	0.00	0.00	0.00	0.00	0.99	0.07	42.53	3.00
9/30/2010	0.00	0.00	0.00	0.00	1.10	0.06	0.00	0.00
12/31/2010	0.00	0.00	5.84	0.50	0.35	0.03	0.00	0.00
3/31/2011	0.00	0.00	0.00	0.00	0.54	0.05	0.00	0.00
6/30/2011	0.00	0.00	0.00	0.00	1.75	0.10	35.03	2.00
9/30/2011	0.00	0.00	10.68	0.80	1.20	0.09	0.00	0.00
12/31/2011	25.02	2.00	6.19	0.50	0.55	0.04	0.00	0.00
3/31/2012	0.00	0.00	0.00	0.00	2.09	0.21	0.00	0.00

Table C-5. Reported monthly data for Outfall 005 from July 2005 through April 2012.

	Food	Fish	Flow	DO	% DO	pH		Temperature
	lbs/day	lbs/day	MGD	mg/l		S.U.		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Daily Min	Daily Min	Minimum	Maximum	Daily Max
07/31/2005	26.37	107.8	4.7	9.72	95.7	6.52	7.12	63.7
08/31/2005	2.84	107.7	4.	9.54	97.6	6.89	7.33	68.18
09/30/2005	14.93	231.4	5.	10.55	95.7	6.01	6.76	59.72
10/31/2005	63.68	260.78	6.	10.71	91.	5.63	6.56	53.24
11/30/2005	37.74	280.19	6.	14.59	112.8	5.24	6.53	43.52
12/31/2005	26.13	291.71	5.1	14.48	99.4	5.66	6.45	33.62
01/31/2006	24.19	300.59	5.1		100.2	5.84	6.48	33.62
02/28/2006	25.71	337.75	5.1	14.34	99.4	6.23	6.83	33.8
03/31/2006	27.42	314.01	5.1	14.97	105.2	6.12	6.46	41.54
04/30/2006	38.83	431.26	5.8	12.82	99.4	6.39	6.65	42.08
05/31/2006	86.61	451.25	6.3	12.04	97.5	6.11	6.55	46.22
06/30/2006	91.67	319.	5.8	10.15	94.5	6.12	6.3	56.66
07/31/2006	35.75	98.25	4.2	9.62	93.6	5.83	6.5	63.88
08/31/2006	2.34	.	3.4	10.24	94.7	6.3	6.74	65.3
09/30/2006	48.13	225.16	3.3	10.68	93.	6.02	6.52	57.56
10/31/2006	53.16	269.34	3.6	12.29	95.7	6.53	6.67	52.7
11/30/2006	40.33	303.2	3.9	13.85	98.7	6.26	6.7	47.48
12/31/2006	22.35	302.33	4.5	14.57	100.2	6.36	6.52	37.22
01/31/2007	26.39	344.35	4.5	14.41	99.2	6.38	6.99	32.36
02/28/2007	23.07	354.59	4.5	14.38	98.2	5.73	7.23	32.9
03/31/2007	23.42	329.03	4.5	14.15	101.8	6.47	6.98	35.96
04/30/2007	24.2	373.73	3.7	13.85	98.6	6.01	6.48	40.64
05/31/2007	48.97	390.02	4.4	11.32	96.5	6.15	6.49	50.72
06/30/2007	102.67	265.45	4.2	8.11	94.6	5.89	6.35	64.04
07/31/2007	47.02	161.55	3.4	9.35	92.2	6.14	6.64	63.68
08/31/2007	10.42	.	2.9	9.37	90.9	5.81	6.72	68.36
09/30/2007	39.5	186.54	3.2	9.76	94.8	6.5	6.52	63.14
10/31/2007	56.94	230.91	2.6	11.6	94.5	6.04	6.52	52.16
11/30/2007	31.5	261.04	2.8	13.99	98.6	5.86	7.01	37.94
12/31/2007	24.19	257.23	3.4	14.82	100.	5.6	6.61	33.08
01/31/2008	28.93	289.68	3.4	16.05	111.3	5.83	6.27	38.12
02/29/2008	25.71	294.46	3.4	13.96	98.2	6.02	6.28	36.5
03/31/2008	23.84	275.	3.4	14.88	104.	6.03	6.75	35.42
04/30/2008	36.	352.93	4.	13.16	96.6	6.22	6.97	50.18
05/31/2008	72.74	396.03	3.3	11.19	96.7	6.02	6.55	53.06
06/30/2008	86.17	370.51	3.2	10.98	96.1	6.18	6.64	60.08
07/31/2008	28.43	147.5	4.	9.31	94.3	6.04	6.94	61.88
08/31/2008	4.84	.	3.6	10.04	93.6	6.13	6.57	59.18
09/30/2008	61.67	224.99	4.5	10.32	91.4	6.14	6.55	59.72
10/31/2008	50.32	275.7	4.9	13.03	99.7	6.19	6.56	51.62
11/30/2008	27.77	293.43	5.1	15.66	101.6	6.05	6.59	45.86
12/31/2008	29.35	293.17	4.1	15.05	103.1	6.04	6.4	34.52
01/31/2009	33.75	334.58	4.1	14.84	101.9	6.23	6.38	33.26
02/28/2009	30.	339.59	4.1	14.54	100.2	6.32	6.56	32.54

	Food	Fish	Flow	DO	% DO	pH		Temperature
	lbs/day	lbs/day	MGD	mg/l		S.U.		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Daily Min	Daily Min	Minimum	Maximum	Daily Max
03/31/2009	29.35	315.65	4.1	15.03	102.9	6.26	6.56	38.66
04/30/2009	36.93	479.94	5.4	13.17	102.9	6.05	6.43	44.6
05/31/2009	69.55	497.14	5.2	11.8	102.6	6.19	6.49	49.64
06/30/2009	52.07	255.32	5.1	11.58	96.9	6.56	6.64	60.08
07/31/2009	14.03	188.38	5.1	10.68	98.6	6.12	6.89	62.96
08/31/2009	4.68	.	4.1	9.29	96.5	6.64	6.85	62.96
09/30/2009	49.87	265.	2.7	10.86	95.2	6.21	7.82	57.92
10/31/2009	53.94	296.47	5.1	12.95	98.7	6.1	6.84	46.94
11/30/2009	35.2	335.77	4.4	12.47	92.	6.11	6.44	39.02
12/31/2009	32.71	333.55	4.6	13.54	92.8	6.1	6.64	39.02
01/31/2010	25.75	379.35	4.6	14.87	102.6	6.09	6.37	32.72
02/28/2010	22.86	389.25	4.6	14.75	102.2	6.26	6.46	33.8
03/31/2010	35.61	455.23	4.6	14.65	104.1	6.41	6.76	37.58
04/30/2010	59.4	547.46	4.4	13.12	104.1	6.57	6.85	48.38
05/31/2010	88.71	527.93	4.2	11.3	110.8	6.64	6.97	59.54
06/30/2010	72.6	302.55	4.	12.66	116.7	6.73	6.81	57.02
07/31/2010	34.06	224.34	3.5	9.71	92.3	6.37	6.91	68.18
08/31/2010	12.1	.	3.8	9.53	92.2	6.55	6.89	63.86
09/30/2010	14.67	654.42	3.1	10.29	98.8	6.7	7.49	67.64
10/31/2010	90.48	717.33	5.	11.35	94.5	6.14	7.81	55.58
11/30/2010	47.67	1001.92	4.	12.81	94.8	6.4	6.71	41.54
12/31/2010	47.9	1025.91	4.	14.36	98.2	6.68	6.91	36.86
01/31/2011	51.07	1163.71	4.	14.26	97.7	6.63	6.87	32.18
02/28/2011	47.14	1187.95	4.	14.31	98.	6.23	6.88	32.
03/31/2011	43.97	1090.24	4.	15.09	105.4	6.51	7.03	38.48
04/30/2011	64.17	938.84	4.	13.25	96.9	6.57	7.47	42.26
05/31/2011	69.19	720.14	4.2	11.99	100.	6.44	7.48	53.78
06/30/2011	85.25	503.94	3.6	10.34	102.6	6.16	7.21	61.16
07/31/2011	33.71	.	3.4	11.41	112.9	6.51	6.68	60.8
8/31/2011	0	0	2.4	9.61	98	6.47	6.96	64.4
9/30/2011	26.58	181.47	3.2	10.92	102.9	6.48	6.84	57.2
10/31/2011	63.63	262.01	3.1	10.79	91.4	6.44	7.73	52.52
11/30/2011	41.67	314.77	4.2	13.2	98.5	6.39	6.74	43.34
12/31/2011	41.94	315.4	3.5	14.19	101.6	6.52	6.9	36.68
1/31/2012	44.64	358.75	3.5	14.45	99	6.2	7.17	32.36
2/29/2012	44.64	368.26	3.5	14.62	99.3	6.04	7.16	32.72
3/31/2012	43.55	446	3.5	13.68	99.3	6.05	6.48	39.92
4/30/2012	41.67	474.56	4	13.48	97.6	6.25	6.89	50.54

Table C-6. Reported quarterly daily maximum values for Outfall 005 from July 2005 through April 2012.

	BOD		Nitrogen		Phosphorus		TSS	
Date	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l
09/30/2005	125.00	3.00	20.85	0.50	1.25	0.03	83.00	2.00
12/31/2005	150.00	3.00	25.00	0.50	1.00	0.02	100.00	2.00
03/31/2006			21.00	0.50	0.43	0.01	85.00	2.00
06/30/2006	0.00	0.00	0.00	0.00	1.05	0.02	0.00	0.00
09/30/2006	0.00	0.00	0.00	0.00	1.10	0.04	0.00	0.00
12/31/2006	0.00	0.00	0.00	0.00	0.65	0.02	0.00	0.00
03/31/2007	0.00	0.00	0.00	0.00	3.00	0.08	0.00	0.00
06/30/2007	0.00	0.00	0.00	0.00	0.37	0.01	0.00	0.00
09/30/2007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/31/2007	0.00	0.00	0.00	0.00	0.70	0.03	70.00	3.00
03/31/2008	0.00	0.00	0.00	0.00	0.57	0.02	0.00	0.00
06/30/2008	0.00	0.00	0.00	0.00	1.10	0.04	0.00	0.00
09/30/2008	0.00	0.00	0.00	0.00	0.60	0.02	0.00	0.00
12/31/2008	0.00	0.00	0.00	0.00	1.28	0.03	0.00	0.00
03/31/2009	0.00	0.00	0.00	0.00	3.08	0.09	0.00	0.00
06/30/2009	0.00	0.00	0.00	0.00	2.13	0.05	0.00	0.00
09/30/2009	0.00	0.00	0.00	0.00	0.38	0.02	0.00	0.00
12/31/2009	0.00	0.00	0.00	0.00	0.59	0.01	0.00	0.00
03/31/2010	0.00	0.00	0.00	0.00	0.77	0.02	0.00	0.00
06/30/2010	0.00	0.00	0.00	0.00	0.67	0.02	0.00	0.00
09/30/2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/31/2010	0.00	0.00	33.36	1.00	0.33	0.01	0.00	0.00
03/31/2011	0.00	0.00	0.00	0.00	0.67	0.02	0.00	0.00
06/30/2011	0.00	0.00	15.00	0.50	1.50	0.05	0.00	0.00
9/30/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/31/2011	58.38	2.00	5.53	0.12	1.63	0.06	0.00	0.00
3/31/2012	0.00	0.00	0.00	0.00	5.11	0.18	0.00	0.00

Table C-7. Reported monthly data for Outfall 007 from July 2005 through April 2012.

	Flow	DO	%DO	pH		Temperature
	MGD	Mg/l		S.U.		Deg F
Date	Mo Avg	Daily Min	Daily Min	Minimum	Maximum	Daily Max
7/31/2005	0.93	9.20	93.90	6.54	6.97	62.20
8/31/2005	1.00	9.13	94.00	6.85	7.29	69.98
9/30/2005	1.00	9.94	93.80	6.20	6.94	61.52
10/31/2005	1.00	10.45	92.70	5.59	6.67	56.48
11/30/2005	1.00	13.71	110.20	5.49	6.61	45.86
12/31/2005	0.90	14.46	99.40	6.02	6.60	33.80
1/31/2006	0.90	14.45	100.40	6.28	6.42	34.16
2/28/2006	0.90	14.65	100.90	6.28	6.63	33.08
3/31/2006	0.90	15.21	105.60	6.15	6.55	39.56
4/30/2006	0.90	12.37	96.50	6.02	6.57	46.40
5/31/2006	0.90	11.29	96.20	6.09	6.44	51.80
6/30/2006	0.80	10.12	92.60	6.18	6.24	61.34
7/31/2006	0.80	9.25	92.90	6.11	6.36	68.00
8/31/2006						
9/30/2006						
10/31/2006						
11/30/2006	1.20	13.89	99.30	6.32	6.71	47.66
12/31/2006	0.90	14.59	101.00	6.28	6.55	35.24
1/31/2007	0.90	14.53	100.10	6.33	6.84	34.52
2/28/2007	0.90	14.70	101.40	5.65	7.79	32.72
3/31/2007	0.90	14.48	101.50	6.34	6.62	33.08
4/30/2007	1.50	14.20	100.10	6.02	6.49	40.64
5/31/2007	1.20	11.79	98.40	6.02	6.48	54.50
6/30/2007	1.20	10.07	96.30	5.92	6.38	65.48
7/31/2007	1.00	8.62	89.50	6.34	6.42	67.10
8/31/2007						
9/30/2007	0.20	9.32	91.50	6.06	6.89	67.82
10/31/2007	0.50	11.47	96.90	6.01	6.47	55.76
11/30/2007	0.40	13.52	99.00	5.93	6.34	38.12
12/31/2007	0.90	14.28	99.50	5.84	6.47	33.08
1/31/2008	0.90	15.96	106.00	5.95	6.22	33.62
2/29/2008	0.90	13.80	97.10	6.07	6.61	35.60
3/31/2008	0.90	13.22	92.00	6.36	6.96	35.96
4/30/2008	0.70	12.22	94.90	6.29	7.12	52.34
5/31/2008	0.50	11.02	96.50	6.16	6.56	57.92
6/30/2008	0.60	10.09	93.00	6.26	6.63	64.94
7/31/2008	0.50	8.56	89.80	6.07	6.75	67.64
8/31/2008	0.40	9.09	88.40	6.02	6.60	61.52
9/30/2008	0.06	9.38	88.30	6.17	6.74	63.68
10/31/2008	0.50	12.47	97.60	6.30	6.66	53.24
11/30/2008	0.50	14.13	98.40	6.05	6.56	43.70
12/31/2008	0.50	14.35	99.20	6.26	6.63	34.34
1/31/2009	0.50	14.78	101.30	6.21	6.40	32.54
2/28/2009	0.50	15.50	99.70	6.03	6.88	32.72
3/31/2009	0.50	14.88	102.60	6.25	6.60	37.94
4/30/2009	0.05	13.27	102.30	6.06	6.78	49.28

	Flow	DO	%DO	pH		Temperature
	MGD	Mg/l		S.U.		Deg F
Date	Mo Avg	Daily Min	Daily Min	Minimum	Maximum	Daily Max
5/31/2009	0.50	11.00	96.80	6.04	6.51	51.62
6/30/2009	0.50	10.72	95.40	6.35		62.78
7/31/2009	0.50	10.23	92.40	6.02	6.87	65.30
8/31/2009	0.30	9.71	95.50	6.11	6.71	65.12
9/30/2009	0.30	8.44	86.40	6.22	7.07	58.82
10/31/2009	0.40	12.48	96.60	6.06	6.57	49.46
11/30/2009	0.40	11.91	89.10	6.12	6.36	40.10
12/31/2009	0.40	13.16	90.70	6.13	6.40	40.28
1/31/2010	0.40	14.29	98.70	6.37	6.59	32.54
2/28/2010	0.40	14.61	100.40	6.35	6.53	32.72
3/31/2010	0.40	14.62	102.70	6.16	6.86	34.52
4/30/2010	0.40	14.08	103.60	6.61	6.79	51.08
5/31/2010	0.40	11.04	105.30	6.46	6.75	65.48
6/30/2010	0.40	12.02	114.20	6.65	6.82	61.16
7/31/2010	0.30	7.58	83.30	6.21	6.89	70.34
8/31/2010	0.30	7.75	83.10	6.48	6.91	66.92
9/30/2010	0.20	8.86	90.70	6.67	7.58	71.24
10/31/2010						
11/30/2010	0.50	13.33	99.10	6.24	6.78	39.38
12/31/2010	0.40	14.65	100.40	6.53	6.78	36.14
1/31/2011	0.40	15.12	102.20	6.58	6.87	32.36
2/28/2011	0.40	14.98	103.10	6.05	6.73	32.36
3/31/2011	0.40	15.35	105.70	6.41	6.64	34.16
4/30/2011	0.40	14.22	101.70	6.29	7.56	47.66
5/31/2011	0.50	11.87	105.70	6.33	6.72	57.38
6/30/2011	0.40	10.76	111.20	6.13	6.50	63.68
7/31/2011	0.40	10.00	105.60	6.38	6.51	66.92
8/31/2011	0.40	8.81	92.90	6.29	6.65	66.02
9/30/2011	0.40	8.92	89.30	6.52	6.58	59.90
10/31/2011	0.40	10.84	92.50	6.37	7.45	53.42
11/30/2011	0.50	12.48	97.30	6.36	6.79	43.52
12/31/2011	0.40	14.42	99.80	6.38	6.75	38.48
1/31/2012	0.40	14.39	99.10	6.41	6.91	32.54
2/29/2012	0.40	14.50	100.10	6.21	6.81	32.72
3/31/2012	0.40	14.40	106.60	6.07	6.59	42.98
4/30/2012	0.50	12.47	95.70	6.02	6.86	53.78

Table C-8. Reported quarterly daily maximum values for Outfall 007 from July 2005 through April 2012.

	BOD		Nitrogen		Phosphorus		TSS	
Date	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l
9/30/2005	25.00	3.00	4.17	0.50	0.42	0.05	16.68	2.00
12/31/2005	22.50	3.00	3.80	0.50	0.30	0.04	15.00	2.00
3/31/2006			3.80	0.50	0.15	0.02	15.00	2.00
6/30/2006	0.00	0.00	0.00	0.00	0.30	0.04	0.00	0.00
9/30/2006								
12/31/2006	0.00	0.00	0.00	0.00	0.30	0.03	0.00	0.00
3/31/2007	0.00	0.00	0.00	0.00	0.30	0.04	15.01	2.00
6/30/2007	0.00	0.00	0.00	0.00	0.20	0.02	0.00	0.00
9/30/2007	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
12/31/2007	0.00	0.00	0.00	0.00	0.17	0.05	0.00	0.00
3/31/2008	0.00	0.00	0.00	0.00	0.30	0.04	0.00	0.00
6/30/2008	0.00	0.00	0.00	0.00	0.17	0.04	0.00	0.00
9/30/2008	0.00	0.00	1.67	0.50	0.27	0.08	0.00	0.00
12/31/2008	0.00	0.00	0.00	0.00	0.17	0.04	0.00	0.00
3/31/2009	0.00	0.00	0.00	0.00	0.33	0.08	0.00	0.00
6/30/2009	0.00	0.00	0.00	0.00	0.40	0.10	0.00	0.00
9/30/2009	0.00	0.00	1.50	0.60	0.27	0.11	0.00	0.00
12/31/2009	0.00	0.00	0.21	0.63	0.21	0.64	0.00	0.00
3/31/2010	0.00	0.00	2.34	0.70	0.17	0.05	0.00	0.00
6/30/2010	0.00	0.00	0.00	0.00	0.20	0.06	6.67	2.00
9/30/2010	0.00	0.00	1.17	0.70	0.08	0.05	0.00	0.00
12/31/2010	0.00	0.00	1.67	0.50	0.07	0.02	0.00	0.00
3/31/2011	0.00	0.00	0.00	0.00	0.10	0.03	0.00	0.00
6/30/2011	0.00	0.00	0.00	0.00	0.17	0.05	0.00	0.00
9/30/2011	0.00	0.00	0.00	0.00	0.27	0.08	0.00	0.00
12/31/2011	3.34	1.00	1.40	0.42	0.13	0.04	0.00	0.00
3/31/2012	0.00	0.00	0.00	0.00	0.76	0.23	0.00	0.00

Table C-9. Reported monthly data for Outfall 008 from July 2005 through April 2012.

	Food	Fish	Flow	DO	DO % Sat	pH		Phosphorus		Phosphorus		Temperature
	lbs/day	lbs/day	MGD	mg/l		S.U.		lbs/day		mg/l		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Daily Min	Daily Min	Minimum	Maximum	Mo Avg	Daily Max	Mo Avg	Daily Max	Daily Max
7/31/2005	76.90	428.00	1.80	9.46	94.50	6.58	7.04	0.15	0.15	0.01	0.01	64.80
8/31/2005	176.60	723.00	1.85	9.42	93.60	6.81	7.33	0.77	0.77	0.05	0.05	70.16
9/30/2005	211.37	1061.00	1.88	10.57	94.50	6.26	6.98	0.94	0.94	0.06	0.06	60.44
10/31/2005	175.13	1297.39	1.73	10.80	95.20	5.64	6.63	0.58	0.58	0.04	0.04	55.76
11/30/2005	101.48	1530.10	1.82	14.33	113.10	5.75	6.42	0.61	0.61	0.04	0.04	44.96
12/31/2005	94.94	1588.38	1.80	14.62	100.80	6.15	6.48	0.60	0.60	0.04	0.04	33.26
1/31/2006	85.32	1619.25	1.80	15.04	103.70	6.27	6.62	0.75	0.75	0.05	0.05	33.80
2/28/2006	79.71	1823.69	1.80	14.75	101.90	6.21	6.66	0.75	0.75	0.05	0.05	33.26
3/31/2006	82.74	1676.98	1.80	15.72	108.20	6.16	6.45	0.60	0.60	0.04	0.04	38.84
4/30/2006	106.60	1689.62	1.70	12.76	98.50	6.23	6.52	0.57	0.57	0.04	0.04	44.60
5/31/2006	92.65	893.46	1.80	11.57	97.10	6.13	6.40	0.60	0.60	0.04	0.04	46.94
6/30/2006	53.43	122.52	1.80	10.48	95.10	6.23	6.33	0.45	0.45	0.03	0.03	59.72
7/31/2006	1.03	0.00	1.30	9.75	96.10	6.30	6.81	0.11	0.11	0.01	0.01	67.10
8/31/2006	6.26	194.40	1.90	9.98	94.50	6.44	6.80	0.32	0.32	0.02	0.02	68.00
9/30/2006	20.10	0.00	2.60	10.67	97.50	6.50	6.59	0.65	0.65	0.03	0.03	59.00
10/31/2006	63.39	888.19	2.60	12.34	98.20	6.32	6.76	0.43	0.43	0.02	0.02	50.54
11/30/2006	85.07	1059.09	1.40	14.07	100.50	6.28	6.70	0.35	0.35	0.03	0.03	47.66
12/31/2006	65.06	1118.64	1.60	14.29	100.40	6.30	6.47	0.27	0.27	0.02	0.02	36.86
1/31/2007	77.21	1264.02	1.60	14.44	100.60	6.32	6.89	0.27	0.27	0.02	0.02	33.44
2/28/2007	69.43	1286.29	1.60	14.78	101.40	6.04	6.77	0.80	0.80	0.06	0.06	32.72
3/31/2007	63.29	1174.57	1.60	14.29	99.60	6.39	7.30	0.40	0.40	0.03	0.03	38.12
4/30/2007	72.00	1213.38	1.10	13.64	100.10	6.21	6.46	0.37	0.37	0.04	0.04	40.82
5/31/2007	71.06	867.51	1.60	11.45	97.20	6.30	6.46	0.13	0.13	0.01	0.01	52.70
6/30/2007	51.10	190.59	1.50	10.16	98.70	6.04	6.49	0.13	0.13	0.01	0.01	67.64
7/31/2007	83.50	180.00	1.80	9.94	98.00	6.33	6.64	0.45	0.45	0.03	0.03	68.00
8/31/2007	148.96	512.05	2.50	9.40	93.50	5.93	6.84	0.63	0.63	0.03	0.03	71.24
9/30/2007	155.60	782.00	2.10	9.45	92.50	6.21	6.87	0.88	0.88	0.05	0.05	66.56
10/31/2007	165.29	1103.14	1.90	11.75	96.50	6.06	6.53	0.79	0.79	0.05	0.05	53.78
11/30/2007	89.33	1308.66	1.90	14.21	99.20	5.92	6.36	0.79	0.79	0.05	0.05	38.30
12/31/2007	66.94	1310.81	1.80	14.74	101.50	5.96	6.64	0.45	0.45	0.03	0.03	34.88
1/31/2008	80.04	1468.80	2.00	15.62	108.00	6.06	6.34	0.33	0.33	0.02	0.02	37.40

	Food	Fish	Flow	DO	DO % Sat	pH		Phosphorus		Phosphorus		Temperature
	lbs/day	lbs/day	MGD	mg/l		S.U.		lbs/day		mg/l		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Daily Min	Daily Min	Minimum	Maximum	Mo Avg	Daily Max	Mo Avg	Daily Max	Daily Max
2/29/2008	74.11	1496.75	2.00	13.65	97.30	6.14	6.64	0.50	0.50	0.03	0.03	35.42
3/31/2008	69.61	1377.64	1.80	13.68	94.60	6.09	6.78	0.60	0.60	0.04	0.04	36.14
4/30/2008	73.50	1371.53	1.60	14.78	112.00	6.14	7.14	0.53	0.53	0.04	0.04	53.42
5/31/2008	96.10	1023.66	1.70	10.02	90.80	6.08	6.60	0.57	0.57	0.04	0.04	59.54
6/30/2008	90.70	626.94	1.80	10.13	90.70	6.23	6.55	0.30	0.30	0.02	0.02	60.80
7/31/2008	150.59	589.76	1.70	8.61	88.00	6.18	6.72	0.43	0.43	0.03	0.03	66.92
8/31/2008	234.74	1104.22	1.70	9.03	85.30	6.05	6.51	0.71	0.71	0.05	0.05	64.58
9/30/2008	255.07	1533.69	1.70	9.11	86.80	6.04	6.44	0.85	0.85	0.06	0.06	66.20
10/31/2008	167.97	1565.42	1.60	12.17	95.20	6.30	6.71	0.40	0.40	0.03	0.03	52.16
11/30/2008	67.22	1743.98	1.80	14.21	98.70	6.18	6.78	0.60	0.60	0.04	0.04	45.32
12/31/2008	81.42	1745.86	1.90	15.59	101.50	6.44	6.82	0.48	0.48	0.03	0.03	35.24
1/31/2009	96.43	1966.04	1.90	14.46	99.20	6.28	6.62	0.63	0.63	0.04	0.04	32.36
2/28/2009	85.71	1.80	1.80	14.31	98.10	6.10	6.42	1.05	1.05	0.07	0.07	32.36
3/31/2009	83.87	1831.75	1.80	14.23	100.30	6.33	6.39	0.90	0.90	0.06	0.06	36.68
4/30/2009	99.83	1627.69	1.80	12.98	100.20	6.12	6.58	0.75	0.75	0.05	0.05	40.64
5/31/2009	133.87	1229.95	1.70	10.50	93.70	6.32	6.75	0.57	0.57	0.04	0.04	49.28
6/30/2009	96.47	804.85	1.50	10.22	92.60	6.53	6.51	1.13	1.13	0.09	0.09	59.90
7/31/2009	147.98	872.34	1.40	10.11	91.60	6.02	6.86	0.82	0.82	0.07	0.07	64.04
8/31/2009	267.84	1100.77	1.50	7.66	79.10	6.31	6.57	1.38	1.38	0.11	0.11	66.38
9/30/2009	260.30	1340.86	1.40	8.28	82.60	6.10	6.65	0.81	0.81	0.07	0.07	59.72
10/31/2009	155.81	1472.10	1.40	12.59	96.30	6.01	6.59	0.82	0.82	0.07	0.07	47.66
11/30/2009	106.39	1655.72	1.40	11.76	87.50	6.28	6.44	0.93	0.93	0.08	0.08	38.30
12/31/2009	85.48	1585.88	1.50	12.99	89.10	6.19	6.41	0.37	0.37	0.03	0.03	40.82
1/31/2010	94.71	1785.04	1.70	12.69	97.50	6.06	6.82	0.71	0.71	0.05	0.05	32.36
2/28/2010	83.79	1808.39	1.60	14.56	98.70	6.14	6.41	1.07	1.07	0.08	0.08	32.90
3/31/2010	98.52	1843.86	1.60	13.95	96.60	6.62	6.78	1.07	1.07	0.08	0.08	37.76
4/30/2010	135.80	1687.54	1.50	11.44	94.40	6.40	6.77	0.38	0.38	0.03	0.03	47.66
5/31/2010	136.87	1144.46	1.40	11.15	111.00	6.54	7.12	0.70	0.70	0.06	0.06	62.24
6/30/2010	72.85	673.20	1.10	10.99	122.10	6.70	6.85	0.46	0.46	0.05	0.05	60.26
7/31/2010	88.73	458.95	1.30	9.24	91.90	6.57	7.21	0.43	0.43	0.04	0.04	69.98
8/31/2010	157.37	630.88	1.00	8.61	90.90	6.56	6.81	0.58	0.58	0.07	0.07	68.54
9/30/2010	137.75	0.00	0.80	10.06	104.30	6.76	6.98	0.40	0.40	0.06	0.06	71.24
10/31/2010												
11/30/2010	56.38	1257.73	2.30	13.18	98.00	6.46	6.78	0.38	0.38	0.02	0.02	39.74
12/31/2010	58.11	1237.05	2.10	14.46	99.20	6.19	6.85	0.35	0.35	0.02	0.02	36.14

	Food	Fish	Flow	DO	DO % Sat	pH		Phosphorus		Phosphorus		Temperature
	lbs/day	lbs/day	MGD	mg/l		S.U.		lbs/day		mg/l		Deg F
Date	Mo Avg	Mo Avg	Mo Avg	Daily Min	Daily Min	Minimum	Maximum	Mo Avg	Daily Max	Mo Avg	Daily Max	Daily Max
1/31/2011	63.61	1424.32	1.90	14.66	99.60	6.51	6.78	0.48	0.48	0.03	0.03	32.18
2/28/2011	57.21	1480.72	1.70	14.62	100.20	6.19	6.69	0.43	0.43	0.03	0.03	32.00
3/31/2011	60.21	1340.78	1.80	14.83	101.40	6.27	6.62	0.45	0.45	0.03	0.03	34.52
4/30/2011	63.00	1065.72	1.90	13.61	99.50	6.35	7.69	0.48	0.48	0.03	0.03	44.60
5/31/2011	58.77	552.63	1.80	11.79	104.50	6.34	6.65	0.30	0.30	0.02	0.02	55.58
6/30/2011	50.77	254.67	1.50	10.40	103.40	6.29	6.71	0.63	0.63	0.05	0.05	63.86
7/31/2011	115.47	490.22	1.30	10.39	104.90	6.45	6.63	0.43	0.43	0.04	0.04	65.30
8/31/2011	200.99	667.18	1.30	8.86	93.50	6.41	6.72	0.65	0.65	0.06	0.06	64.22
9/30/2011	212.57	1125.34	1.50	9.17	91.20	6.41	6.52	0.88	0.88	0.07	0.07	59.18
10/31/2011	162.77	1247.08	1.30	9.96	86.30	6.41	6.96	0.78	0.78	0.07	0.07	53.24
11/30/2011	114.55	1600.42	1.70	12.37	94.30	6.42	6.64	0.75	0.75	0.05	0.05	42.98
12/31/2011	81.40	1614.40	1.90	14.21	99.90	6.20	6.74	0.51	0.51	0.03	0.03	35.78
1/31/2012	90.18	1820.28	1.80	14.28	98.30	6.51	6.89	0.74	0.74	0.05	0.05	32.18
2/29/2012	90.18	1843.81	1.70	14.32	97.90	6.20	6.81	4.54	4.54	0.32	0.32	32.36
3/31/2012	96.23	1733.31	1.80	13.64	96.10	6.18	6.48	3.14	3.14	0.21	0.21	40.82
4/30/2012	105.20	1560.00	1.70	12.67	94.10	6.24	6.72	3.86	3.86	0.27	0.27	50.90

Table C-10. Reported quarterly daily maximum values for Outfall 008 from July 2005 through April 2012.

	BOD		Nitrogen		TSS	
Date	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l
9/30/2005	47.00	3.00	7.84	0.50	31.00	2.00
12/31/2005	45.00	3.00	7.50	0.50	30.00	2.00
3/31/2006			7.50	0.50	30.00	2.00
6/30/2006	0.00	0.00	0.00	0.00	0.00	0.00
9/30/2006	0.00	0.00	0.00	0.00	43.00	2.00
12/31/2006	0.00	0.00	0.00	0.00	0.00	0.00
3/31/2007	0.00	0.00	0.00	0.00	0.00	0.00
6/30/2007	0.00	0.00	0.00	0.00	0.00	0.00
9/30/2007	0.00	0.00	0.00	0.00	0.00	0.00
12/31/2007	79.00	5.00	0.00	0.00	47.00	3.00
3/31/2008	0.00	0.00	0.00	0.00	0.00	0.00
6/30/2008	0.00	0.00	0.00	0.00	0.00	0.00
9/30/2008	0.00	0.00	9.92	0.70	0.00	0.00
12/31/2008	0.00	0.00	0.00	0.00	0.00	0.00
3/31/2009	0.00	0.00	0.00	0.00	0.00	0.00
6/30/2009	0.00	0.00	7.50	0.30	25.02	2.00
9/30/2009	0.00	0.00	8.17	0.70	0.00	0.00
12/31/2009	0.00	0.00	0.00	0.00	0.00	0.00
3/31/2010	53.38	4.00	9.34	0.70	0.00	0.00
6/30/2010	27.52	3.00	0.00	0.00	0.00	0.00
9/30/2010	0.00	0.00	0.00	0.00	13.34	2.00
12/31/2010	0.00	0.00	0.00	0.00	0.00	0.00
3/31/2011	0.00	0.00	0.00	0.00	0.00	0.00
6/30/2011	0.00	0.00	0.00	0.00	0.00	0.00
9/30/2011	0.00	0.00	0.00	0.00	0.00	0.00
12/31/2011	31.69	2.00	0.00	0.00	0.00	0.00
3/31/2012	0.00	0.00	0.00	0.00	0.00	0.00

Table C-11. Estimated mean annual nitrogen load (pounds per year) to the receiving waters from the four outfalls based on quarterly total nitrogen load from July 2005 through April 2012.

	Mean Total Nitrogen (lbs/day)	Mean Total Nitrogen (lbs/year)
Outfall 004	3.14	1146.10
Outfall 005	4.47	1631.55
Outfall 007	0.84	306.60
Outfall 008	2.14	781.10
Total		***3865.35***

Attachment D
Calculation of Estimated Total Phosphorus Load

Date	Flow	Total Phosphorus (reported)	Total Phosphorus (anticipated)	Total Phosphorus	Estimated Total Phosphorus Load	
	Monthly Average	Monthly Average	Monthly Average	Monthly Average	Annual Average	Annual Total
	MGD	mg/l	mg/l	lb/day	lb/day	lb/year
01/31/2006	1.8	0.05		0.75		
02/28/2006	1.8	0.05		0.75		
03/31/2006	1.8	0.04		0.60		
04/30/2006	1.7	0.04		0.57		
05/31/2006	1.8	0.04		0.60		
06/30/2006	1.8	0.03		0.45		
07/31/2006	1.3	0.01		0.11		
08/31/2006	1.9	0.02		0.32		
09/30/2006	2.6	0.03		0.65		
10/31/2006	2.6	0.02		0.43		
11/30/2006	1.4	0.03		0.35		
12/31/2006	1.6	0.02		0.27	0.49	177.94
01/31/2007	1.6	0.02		0.27		
02/28/2007	1.6	*0.06*	.05	0.67		
03/31/2007	1.6	0.03		0.40		
04/30/2007	1.1	0.04		0.37		
05/31/2007	1.6	0.01		0.13		
06/30/2007	1.5	0.01		0.13		
07/31/2007	1.8	0.03		0.45		
08/31/2007	2.5	0.03		0.63		
09/30/2007	2.1	0.05		0.88		
10/31/2007	1.9	0.05		0.79		
11/30/2007	1.9	0.05		0.79		
12/31/2007	1.8	0.03		0.45	0.50	181.20
01/31/2008	2.	0.02		0.33		
02/29/2008	2.	0.03		0.50		
03/31/2008	1.8	0.04		0.60		
04/30/2008	1.6	0.04		0.53		
05/31/2008	1.7	0.04		0.57		
06/30/2008	1.8	0.02		0.30		
07/31/2008	1.7	0.03		0.43		
08/31/2008	1.7	0.05		0.71		
09/30/2008	1.7	*0.06*	.05	0.71		

10/31/2008	1.6	0.03		0.40		
11/30/2008	1.8	0.04		0.60		
12/31/2008	1.9	0.03		0.48	0.51	187.33
01/31/2009	1.9	0.04		0.63		
02/28/2009	1.8	*0.07*	.05	0.75		
03/31/2009	1.8	*0.06*	.05	0.75		
04/30/2009	1.8	0.05		0.75		
05/31/2009	1.7	0.04		0.57		
06/30/2009	1.5	*0.09*	.05	0.63		
07/31/2009	1.4	*0.07*	.05	0.58		
08/31/2009	1.5	*0.11*	.05	0.63		
09/30/2009	1.4	*0.07*	.05	0.58		
10/31/2009	1.4	*0.07*	.05	0.58		
11/30/2009	1.4	*0.08*	.05	0.58		
12/31/2009	1.5	0.03		0.37	0.62	225.31
01/31/2010	1.7	0.05		0.71		
02/28/2010	1.6	*0.08*	.05	0.67		
03/31/2010	1.6	*0.08*	.05	0.67		
04/30/2010	1.5	0.03		0.38		
05/31/2010	1.4	*0.06*	.05	0.58		
06/30/2010	1.1	0.05		0.46		
07/31/2010	1.3	0.04		0.43		
08/31/2010	1.	*0.07*	.05	0.42		
09/30/2010	.8	*0.06*	.05	0.33		
10/31/2010						
11/30/2010	2.3	0.02		0.38		
12/31/2010	2.1	0.02		0.35	0.49	178.48
01/31/2011	1.9	0.03		0.48		
02/28/2011	1.7	0.03		0.43		
03/31/2011	1.8	0.03		0.45		
04/30/2011	1.9	0.03		0.48		
05/31/2011	1.8	0.02		0.30		
06/30/2011	1.5	0.05		0.63		
07/31/2011	1.3	0.04		0.43		
8/31/2011	1.3	*0.06*	.05	0.54		
9/30/2011	1.5	*0.07*	.05	0.63		
10/31/2011	1.3	*0.07*	.05	0.54		
11/30/2011	1.7	*0.05*	.05	0.71		
12/31/2011	1.9	0.03		0.51	0.51	186.41