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

Milford State Fish Hatchery
386 North River Road
Milford, New Hampshire

to receiving water named

Purgatory Brook
(Hydrologic Basin Code: 01070006)

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

This permit shall become effective on the data of signature.

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

This permit supersedes the permit issued on March 31, 2004.

This permit consists of **15** pages in Part I including effluent limitations, monitoring requirements, etc., and **25** pages in Part II including Standard Conditions and Definitions.

Signed this 8th day of August, 2011

/s/ Signature on File

_____

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

Part I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.a. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge culture water and treated hatchery effluent from outfall serial number 001 into Purgatory 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 10 mg/l	Report lbs/day 15 mg/l	1/Quarter[2]	Grab[3]
BOD_5	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2]	Grab[3]
Total Phosphorus as P[4]	Report lbs/day Report mg/l	Report lbs/day Report mg/l	1/Quarter[2] except as directed in Part I.C	Grab[3]
Total Phosphorus as P[4]; Receiving water	-	Report mg/l	1/month June - September	Grab
Chlorophyll-*a*; Receiving water	-	Report mg/l	1/month June - September	Grab
Total Ammonia as N	Report mg/l	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[3]
pH Range[5]	6.5 to 8.0 standard units (see Part I.E.1.a)		1/Week	Grab
Fish Biomass on Hand[6], lbs	Report	---	Monthly	Calculation
Fish Feed Used, lbs	Report	---	Monthly	Calculation
Efficiency of Fish Feed Used[7], Percent	Report	---	Monthly	Calculation
Total Residual Chlorine[8] (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[9], mg/l	---	Report	1/Month (Formalin Absent)	Grab
Dissolved Oxygen Saturation[9], Percent	---	Report	1/Month (Formalin Absent)	Grab
Water Temperature, ˚F	---	Report	1/Month (Formalin Absent)	Grab
Formaldehyde[10], mg/l	1.6	4.6	1/Week (Formalin Present)	Grab
Dissolved Oxygen[10], mg/l	---	Report	1/Week (Formalin Present)	Grab

NOTE: See pages 4 through 5 for explanation of the various footnotes.

Part I.
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS
EXPLANATION OF FOOTNOTES APPLICABLE TO Parts I.A.1.

(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.

(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 Discharge Monitoring Report.

(3) To obtain approval for a change in sample type from "Grab" to "24 Hour Composite", the permittee shall submit a request to EPA listing the months to which this change shall apply and receive written authorization via certified letter to proceed with the change.

(4) 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 minimum level 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.

(5) Limit is a State Certification Requirement.

(6) 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.6.

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

(8) The minimum level (ML) for total residual chlorine is defined as 20 µg/l. For total residual chlorine, this is the minimum level 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.

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

(10) 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.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

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

3. The discharge shall 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. There shall be no direct discharge of "cleaning water." 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.

9. 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.

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

11. 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 Discharge Monitoring Report, 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 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 implement and maintain a BMP Plan (hereafter referred to as the "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 developed in accordance with requirements listed in this part and must submit that certification with the appropriate DMR.

Further, the permittee shall amend the PLAN within 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.8. prohibits the direct discharge of cleaning water absent some form of solids removal prior to discharge. In addition, within one year from the effective date of the permit, the permittee shall investigate the feasibility of installing a quiescent zone near Outfall 001 in the west settling pond to discourage fish from disturbing settled solids near the outfall.

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 animals mortalities properly and on a regular basis to prevent discharge to waters of the United States, except in cases where EPA and NHDES-WD authorizes such discharges in order to benefit the aquatic environment.

b. Biological Control

i. Describe in detail the precautions that will be exercised by the facility to prevent aquatic organisms that are neither indigenous nor naturalized to New Hampshire waters from becoming established in the local surface waters.

ii. Provide a description for 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.) and the duration (hours, days) of treatment, and the method of application.

f. Training

i. In order to ensure the proper clean-up and disposal of material, adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.

ii. Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

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

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

i. Product name and manufacturer.

ii. Chemical formulation.

iii. Purpose/reason for its use.

iv. Dosage concentration, frequency of application (hourly, daily, etc.) and the duration (hours, days) of application.

v. The method of application.

vi. Material Safety Data Sheets (MSDS) and Chemical Abstracts Service Registry number for each active therapeutic ingredient.

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

viii. 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 CFR Part 530.

e. Investigational New Animal Drug (INAD) - drug for which there is a valid exemption in effect under section 512(j) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. 360b(j), to conduct experiments.

f. New Animal Drug Application - defined in 512(b)(1) of the Federal Food, Drug, and Cosmetic Act [21 U.S.C. 360(b)(1)].

g. Pesticide - any substance defined as a "pesticide" in section 2(u) of the Federal Insecticide, Fungicide, and Rodenticide Act [7 U.S.C. 136(u)].

C. SPECIAL CONDITIONS

Ambient Monitoring of Purgatory Brook

The permittee shall conduct ambient monitoring once per month from June through September each year for the duration of the permit at the following locations: a mid-stream location in Purgatory Brook upstream of Outfall 001 at a location representative of ambient conditions prior to mixing with effluent from the hatchery; and a mid-stream location in Purgatory Brook downstream of Outfall 001 at a location representative of the receiving water after complete mixing of effluent from the hatchery. The permittee shall collect grab samples and report total phosphorus, chlorophyll-*a*, dissolved oxygen concentration, percent dissolved oxygen saturation, and temperature. To the extent practicable, ambient monitoring shall be collected following a minimum of 72 hours with no precipitation (i.e., dry weather). Sampling for dissolved oxygen shall be collected between 10:00 am and 2:00 pm. In addition, the permittee shall collect monthly sampling of total phosphorus at Outfall 001concurrent with June through September instream ambient monitoring. Each year, results from all monitoring shall be reported with the DMRs for October which are due to the Agencies 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. 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 (4) on page 4 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.D.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 pH of the discharge shall be in the range of 6.5 to 8.0 standards units (s.u.) unless the upstream ambient pH in the receiving water is outside of this range, and is not altered by the facility's discharge or activities. If the permittee's discharge pH is lower than 6.5 S.U., the permittee may demonstrate compliance by showing that the discharge pH is either higher than, or no more than 0.5 S.U. lower than, the ambient upstream river water pH. For this demonstration, the upstream river water sample must be collected on the same day as the discharge pH is measured. The location where the upstream ambient pH sample is collected must be representative of the upstream conditions unaffected by the facility's discharge(s) or activities. Results of the ambient upstream river water pH sampling that are obtained to determine compliance with this limit shall be submitted as an attachment with the DMR.

   b. 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.

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

FACT SHEET

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

PUBLIC NOTICE START AND END DATES: May 13th –June 11, 2011

NPDES PERMIT NO.: NH0110001

NAME AND MAILING ADDRESS OF APPLICANT:

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

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Facility Location

Milford State Fish Hatchery
386 North River Road
Milford, New Hampshire

Mailing Address

New Hampshire Fish and Game Department
Milford State Fish Hatchery
c/o Superintendent
RR3, Box 122, North River Road
Milford, New Hampshire 03055

RECEIVING WATER: Purgatory Brook (Hydrologic Basin Code 01070006)

CLASSIFICATION: Class B

Table of Contents

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

The applicant, the New Hampshire Fish and Game Department (NHF&GD), has applied to the U.S. Environmental Protection Agency, New England Office (EPA) for reissuance of its NPDES permit for the discharge of culture water from its Milford State Fish Hatchery. This state owned and operated facility is engaged in rearing various species of trout (eastern brook, rainbow and brown) hatched from eggs at Milford or other NHF&GD hatcheries. Trout are grown from eggs to fingerling size (3 inches) in the Hatchery House incubation room and indoor tanks and raceways, and from fingerling to yearling size (10 to 11 inches or more) in outdoor tanks and pools.

The Milford State Fish Hatchery's current permit was issued on March 31, 2004 and expired on June 1, 2009. The applicant has requested renewal of its NPDES permit to discharge hatchery wastewater into the designated receiving water and has submitted the proper application materials. Their current

permit has been continued in force (administratively extended) as per 40 Code of Federal Regulations (C.F.R.) § 122.6 until a new permit can be issued.

II. Description of Facility and Discharge

The Milford State Fish Hatchery, originally constructed in 1972, is located near the mouth of the Purgatory Brook drainage basin. The location of the Milford State Fish Hatchery, Outfall 001 and the receiving water (Purgatory Brook) are shown in Attachment A. The hatchery complex consists of an indoor Hatchery House (incubation room, raceways, and tanks), outside nursery tanks, upper circular tanks, lower circular tanks, and east and west in-line settling ponds, all of which are shown in Attachment B. Eggs are hatched in the incubation room, and the hatched eggs are reared in the raceways and tanks once they reach the swim-up stage which is characterized by the consumption of the egg yolk sac and the beginning of feeding from food. Once fry reach fingerling size (about 3 inches), they are transferred to the outside tanks and pools to grow to stockable size. In general, fish hatched from eggs at Milford's hatchery take between 15 to 18 months to grow to a length and weight suitable for stocking.

Annual fish biomass (fish of stocking size) is highest from September through April with a maximum in February or March just prior to annual stocking in spring. Fish production targets are set by the NHF&GD for each of its six fish hatcheries as part of its species management plan for stocking New Hampshire's waterways. According to the 2009 NPDES permit application, Milford's annual production targets by species are: eastern brook trout, 38,000 pounds (lbs); rainbow trout, 67,000 lbs; brown trout, 23,000 lbs; and tiger trout, 3,500 lbs for a total of 131,500 lbs. The Milford State Fish Hatchery raised Atlantic salmon for stocking purposes in the past, but discontinued the rearing of Atlantic salmon prior to issuance of the last permit in 2004. Since trout and salmon are in the same family (Salmonidae) and have similar metabolic rates and habitat requirements, they can coexist in the same stream. The draft permit does not prevent the Milford State Fish Hatchery from raising Atlantic salmon in the future.

The Milford State Fish Hatchery is designated as a concentrated aquatic animal production (CAAP) facility based on criteria found in 40 C.F.R. § 122.24(b) and 40 C.F.R. Part 122 Appendix C (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"). In the NPDES permit application for Milford State Fish Hatchery dated January 15, 2009, NHF&GD reported a maximum weight of fish present at any one time of 144,000 lbs and 15,425 lbs of food during the calendar month of maximum feeding. Based on the application and monthly Discharge Monitoring Reports (DMRs), the facility will continue to discharge more than 30 days in a given year and produce more than 20,000 lbs harvest weight of fish per year during the next permit cycle.

Discharges from CAAP facilities, such as the Milford State Fish Hatchery, typically contain organic and inorganic solids, nutrients, and chemicals used in the prevention and treatment of various diseases. Any of these constituents could impair the water quality in the receiving water. Dissolved and particulate solids in the discharge result from fish feces and uneaten food particles. Nutrients, such as phosphorus and nitrogen, are associated with these solids. The presence of nutrients can result in excessive growth of any or all of the three main algae types: phytoplankton (floating freely in

water column), periphyton (attached to aquatic vegetation or other structures) and macrophytes (typically attached to bottom sediments). The decay of organic solids resulting from excessive concentrations of solids and nutrients can cause low levels of dissolved oxygen in the receiving water.

EPA will continue to authorize a year-round discharge to the waters of the United States with limits, monitoring requirements and Best Management Practices as described in this Fact Sheet and shown in the accompanying draft permit.

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 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 recently used at the Milford 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). EPA will not regulate (limit use of) the last four chemicals (hypochlorite solutions, oxygen gas and a solution of iodine and phosphoric acid) 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 appropriate and results in increased dissolved oxygen concentrations in the discharged effluent.

- 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 to neutralize chlorine (i.e., a dechlorination agent) 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 New Hampton hatchery. Used as needed and solution is not discharged to the culture water.

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

- Sodium Chloride (Crystalline Form)

- 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 - 37 % Formaldehyde Gas in Water with 16 % Methanol, Chloramine-T, and PEROX-AID require effluent limitations because they have a reasonable potential to exceed New Hampshire's Surface Water Quality Standards (WQS). 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.

A quantitative description of significant effluent parameters from the current permit's effluent monitoring data collected for this facility from June 2004 through November 2010 show: average monthly fish food fed per day ranged from 151 to 512 pounds per day (lbs/day) with an average of 326 lbs/day; and fish biomass on hand ranged from a low of 423 lbs/day to a high of 4,981 lbs/day with an average of 2,225 lbs/day.

III. Description of Receiving Water

Purgatory Brook is designated as a 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.

Purgatory Brook (Assessment unit NHRIV700060904-07) is listed as impaired for Aquatic Life and Primary Contact Recreation uses in NHDES's *Final 2010 Section 303(d) Surface Water Quality List* Submitted to EPA for Approval. Aquatic life is categorized as marginally impaired due to issues related to pH. Primary contact recreation is categorized as severely impaired due to high levels of Escherichia coli. In addition, fish consumption in this waterbody is listed as marginal non-support due to atmospheric deposition of mercury (a state-wide listing). The NHDES's 2010 Watershed Report Card indicates that a total maximum daily load (TMDL) has been completed for mercury.

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 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 this ELG expresses 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. These 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 Milford State Fish Hatchery meets the definition of a CAAP at 40 C.F.R. § 122.24(b) and operates a flow-through system. This facility is expected to produce more than 100,000 pounds of aquatic animals per year, and the ELGs found at 40 C.F.R. Part 451 apply. In compliance with the ELGs, the Milford 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 Purgatory Brook. The BMPs specifically protect Purgatory Brook'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. BMP plan requirements must represent best practicable control technology currently available, best available technology economically achievable, and best conventional technology as applicable and 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]. Similar permit requirements are included in the current permit, therefore, carrying forward requirements associated with the ELGs in the draft permit is also consistent with antibacksliding regulations found in 40 C.F.R. § 122.44(l).

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 instream 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 instream 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 anti-backsliding 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. Anti-backsliding provisions apply to effluent limits based on technology, water quality, BPJ and State Certification requirements. Relief from anti-backsliding provisions can only be granted under one of the defined exceptions [See 40 C.F.R. § 122.44(l)(2)(i)]. All limits included in the Draft Permit are as stringent as or more stringent than those in the previous permit, issued March 31, 2004.

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; with the addition of effluent limits for chlorine (acute and chronic) and peroxide (acute). Because 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 monitoring for chlorine and peroxide, 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

At this facility, trout are grown from hatched eggs to fingerling (3 inches) size in the Hatchery House and from fingerling to yearling size (10 to 11 inches) or slightly greater in the outdoor tanks/ponds for later stocking. As mentioned earlier, 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. Bottom cleaning is performed manually by brushing settled solids towards bottom drain(s) located at the end of the raceways or in the center of the tanks. All effluent

from the hatchery is routed to settling ponds prior to the effluent being discharged into Purgatory Brook.

The Milford State Fish Hatchery consists of: a Hatchery House for hatching eggs and growing just-hatched eggs to fingerling size; Nursery Tanks used for rearing small lots of fish from 1 to 6 inches in length; Upper Set Circular Tanks used to rear fish from 3 to 11 inches in length; and Lower Set Circular Tanks used to rear fish from 3 to 15 inches in length. Nursery tanks are self cleaning with the water going directly to the In-Line Settling Ponds on a continuous basis. Upper circular tanks (maximum of five circular tanks at a time) are manually cleaned between 2 to 4 times per month and flows are directed to the settling pond. Lower circular tanks are manually cleaned 1 to 2 times per month and flows are directed to the settling pond.

The hatchery employs three lagoons (solids settling pond, east settling pond, and west settling pond) to act as final solids removal basins before discharge of the hatchery's effluent into Purgatory Brook (see Attachment B). The solids settling pond receives flow-through water (including cleaning water) from the nursery and circular tanks. The east settling pond typically receives flow-through water (including cleaning water) from the hatchery's nursery and circular tanks. The west settling pond receives overflow from the east settling pond as well as direct discharge of flow-through water (including cleaning water) from the hatchery's nursery and circular tanks. The west settling pond is also used to rear fish. Outfall 001 discharges from the west settling pond to Purgatory Brook.

1. Available Dilution

Available dilution (also referred to as dilution factor) provided by the receiving water is determined using the hatchery's average daily discharge along with the annual 7Q10 low flow of the receiving water; Purgatory Brook. 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.

There is no stream gaging station on Purgatory Brook, and without actual stream gaging records it is necessary to estimate the annual 7Q10 low flow at the facility outfall using other methods such as determining an estimated annual 7Q10 low flow from gaged location on a nearby river thought to have similar hydrologic characteristics as the receiving water, or regression equations such as the "Dingman Equation" that uses drainage area, mean basin elevation and percent of stratified drift in the drainage area. For Milford Hatchery's outfall on Purgatory Brook, the "Dingman Equation" regression equation was used by NHDES-WD to develop an estimated annual 7Q10 low flow value of 0.307 cubic feet per second.

The available dilution (also referred to as dilution factor) in the receiving water was determined in the current permit to be 1.0 using the facility's long-term average daily flow rate of 2.59 MGD (4.0 CFS), an estimated 7Q10 low flow of 0.307 CFS in Purgatory Brook just above the treatment plant's outfall, and a 10 % reserve of assimilative capacity for future needs in New Hampshire streams. The lack of variation in flow on a week to week basis was the reason that the long-term average daily flow rate was chosen for use in determining maximum daily and average monthly limitations because the Agency believes it is the best estimate of the maximum daily and average monthly flow rates. The draft permit requires monitoring and reporting monthly average flow values.

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

The current permit requires monthly monitoring and reporting of 5-Day Biochemical Oxygen Demand (BOD_5) in lbs/day and mg/l. The current permit also includes concentration-based numeric limits for TSS of 10 mg/l (average monthly) and 15 mg/l (maximum daily) and mass-based numeric limits of 216 lbs/day (average monthly) and 324 lbs/day (maximum daily). At the time of issuance, there was no promulgated ELG for CAAP facilities, but technology-based effluent limitations guidelines and standards had been proposed for CAAP facilities (67 FR 57872-57928). The proposed ELG included numeric average monthly and maximum daily limits for TSS. EPA also reviewed numeric TSS limits included in other NPDES permits issued to freshwater fish hatcheries both in New England and in other regions. The average monthly TSS limit in the current permit (10 mg/l) was based on best professional judgment (BPJ) consistent with the average monthly TSS limits included in other hatchery permits. The maximum daily TSS limit in the current permit (15 mg/l) was based on BPJ to allow natural variability between the maximum and average monthly values, and to bring the difference in concentrations between the average monthly and maximum daily values in line with the proposed ELG (5 mg/l).

Since the issuance of the current permit in 2004, EPA has finalized a new rule establishing ELGs for CAAP facilities (40 CFR Part 451). The new rule does not include numeric limits for TSS, but rather establishes 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 addition to good solids management, is "a key element in achieving effective pollution control at CAAP facilities" (69 FR 51907). EPA further explained that, in the reevaluation of the technological basis for the numeric TSS limits, the data showed wide variability among sites and over time, and that the data did not support uniform numeric TSS limits that would be appropriate under all conditions. In contrast to wastewater treatment technologies based on physical or chemical treatment, BMPs may not have consistently predictable performance from site to site. For these reasons, EPA did not promulgate numeric TSS limits (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). However, EPA's decision not to establish numeric TSS limits does not restrict the permit writer's authority to impose site-specific numeric effluent limits on the discharge of TSS or other pollutants in appropriate circumstances (69 FR 51899).

As described in Section V.3 above, EPA's anti-backsliding provision at 40 CFR § 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. There are specific exceptions identified at 40 CFR § 122.44(l)(2)(i) that would allow a permit limit to be relaxed, including if "information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance." The exceptions listed specifically exclude relaxation of permit limits based on revised regulations, which EPA interprets here to include changes made between the issuance of a proposed and final rule. Therefore, the BPJ-based numeric TSS limits must be continued in the draft permit in accordance with antibacksliding regulation found in 40 C.F.R. § 122.44(l) in addition to requiring BMPs for solids control. The draft permit has, however, replaced the mass-based numeric TSS limits with a reporting requirement. The elimination of mass-based limits does not relax the permit, because

concentration-based numeric limits are still included. Regulations at 40 CFR § 122.45(f)(1)(ii) allow for applicable standards and limitations to be expressed in units of measurement other than mass.

The current permit allows the permittee to use a fish metabolic byproduct computer model known as ***The Biological Method for the Prediction of Aquaculture Waste Outputs*** (BMPAWO) to predict BOD_5, Total Ammonia and Total Phosphorus for monitoring purposes in lieu of actual measurements. After a 12-month model verification period that extended from January 2005 through December 2005, the current permit authorizes monthly sampling only for TSS. Sampling for BOD_5, TNH_3 and TP is required every six months, once in January and once in July each year, to ensure that the model continued to accurately reflect operations at the hatchery. According to DMR data submitted from June 2004 through November 2010, the permittee used the BMPAWO to predict TSS, BOD_5, phosphorus, and nitrogen concentrations in the effluent in addition to continued monthly sampling. The data record allowed EPA to compare the predicted effluent concentration value for each parameter to the concentration from the monthly grab sample to evaluate the accuracy of the model to predict operations at the hatchery. The results of this analysis are presented in Table 1.

Table 1. Comparison of effluent concentrations for key parameters between monthly grab samples and calculations using fish metabolic byproduct model.

Parameter	Average concentration based on grab sample (mg/l)	Average difference between grab sample and model calculation (mg/l)[1]	Percent of dates on which model exceeded Grab concentration
TSS	2.3	-0.92	81
BOD	2.0	-2.77	87
Phosphorus	0.1	0.05	10
Nitrogen	0.4	-0.32	90

[1] Negative value indicates that model concentration exceeded grab sample concentration.

On average, the model tended to predict higher concentrations (mg/l) of TSS, BOD_5, and ammonia nitrogen than collected in samples (more than 80% of the time), and lower concentrations of phosphorus than grab samples. The model was least accurate at predicting the concentration of BOD_5 in the effluent, which was, on average, 2.8 mg/l less in the samples than the model predicted. Based on the comparison of sampled and predicted concentrations, EPA concludes that the model does not accurately reflect actual effluent concentrations of TSS, BOD_5, ammonia nitrogen, or phosphorus at the hatchery and should not be used to predict values for these parameters in the future. The draft permit discontinues the use of the model in favor of grab samples. Use of grab samples is carried forward from the current permit and is supported because Outfall 001 discharges from the end of the west settling pond. In this case, a 24-hour composite sample is not warranted because the discharge is unlikely to vary over short periods of time, however, a composite sample is not prohibited (see footnote 3 in Part. I.A.1 of the draft permit).

During the period from June 2004 through November 2010, maximum daily TSS ranged from 0.0 to 8.0 mg/l with a long-term average of 1.6 mg/l. Concentrations of TSS were well below the numeric limits in the current permit, with the exception of the October 2010 sample when the permittee reported unusually high levels of TSS. According to NHDES-WD's compliance database, heavy rains and unusually high amounts of duck weed in the sample may have contributed to high TSS levels for this month. Maximum daily BOD_5 ranged from 0.0 to 13.0 mg/l with a long-term average of 2.1 mg/l. EPA determined that the low reported values and extensive period of record warrant the reduction in monitoring frequency from monthly to quarterly for both parameters. EPA and NHDES anticipate that the BMP prohibiting the direct discharge of cleaning water, coupled with operation of

the settling pond, will ensure the range of pollutant concentrations discharged to the receiving water do not exceed the NH WQS. The draft permit's numeric limits for TSS and continued monitoring of BOD_5 will enable EPA and NHDES to assess the effectiveness of the BMPs for solids control.

3. pH

The pH range limit in the draft permit are based on Section Env-Wq 1703.18 of the New Hampshire Standards, which specify that the pH of Class B waters shall be 6.5 to 8.0 standard units (S.U.), unless due to natural causes. Under the current permit, the permittee had the option of sampling the upstream receiving water to determine whether or not the effluent discharge will significantly alter the pH of the receiving water. The permittee completed a sampling study, and NHDES-WD and EPA-NE determined that hatchery discharge does not significantly alter the pH of the receiving water, and on February 14, 2008, the facility's pH limit range was changed to 6.0 S.U. to 8.0 S.U. In a letter dated February 14, 2008, EPA granted the change in the pH limit effective until expiration of the current permit. DMR data from June 2004 through November 2010 indicate that the pH ranged from a minimum of 5.7 to a maximum of 6.7 S.U with a long-term average of 6.3 S.U.

The draft permit requires the hatchery effluent to be within the range of 6.5 to 8.0 S.U. unless the upstream ambient pH in the receiving water is outside of this range. If the permittee's discharge is less than 6.5 S.U., the permittee may demonstrate compliance by showing that the discharge pH is either higher than, or no more than 0.5 S.U. lower than, the ambient upstream river water pH.

4. Total Residual Chlorine

The facility uses hypochlorite solutions to clean and disinfect rearing units and hatchery equipment, but EPA and NHDES do not believe the use of hypochlorite solutions leads to 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 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.

Treatment of diseased fish 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 neutralizes the treatment solution using sodium thiosulfate, and measures 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 ensure that Chloramine-T use at the facility does not cause chlorine criteria violations in Purgatory Brook. The dilution factor at the hatchery outfall is 1.0, and therefore the maximum daily and average monthly TRC limits are equal to the acute and chronic aquatic life criteria in the NH WQS (19 ug/l and 11 ug/l respectively). The chlorine residual effluent limits and daily monitoring requirement apply whenever Chloramine-T is 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 salmonoids 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.

The facility uses 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 are done one rearing unit at a time, and the tank water level is lowered to minimize the amount of chemical needed to achieve the desired dosage, and to minimize peroxide levels in the hatchery effluent.

The NH WQS do not include aquatic toxicity criteria for hydrogen peroxide, but 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 critertia. The FDA determined that a corresponding chronic benchmark was unnecessary.

The draft permit includes a maximum daily effluent limit of 0.7 mg/l, and requires daily monitoring of hydrogen peroxide when PEROX-AID is in use at the facility. The facility monitors residual peroxide using Hach test kit HYP-T #2291700, which has a detection limit of 0.2 mg/l.

6. Total Ammonia

The current permit requires quarterly monitoring of ammonia nitrogen to provide data to evaluate the potential for this pollutant to exceed NH WQS for ammonia based on the occurrence of two elevated samples in September 2001. The aquatic life chronic criteria (early life stages of fish present) for ammonia as nitrogen (N) for the summer period (instream pH of 6.5 Standard Units and water temperature of 25°C) is 3.39 mg/l and for the winter period (instream pH of 6.5 Standard Units and water temperature of 10°C) is 6.67 mg/l to comply with NH WQS [See Env-Wq 1703.25]. DMR data from June 2004 through November 2010 indicates that the maximum daily ammonia nitrogen concentration has ranged from 0.0 to 1.9 mg/l with a long-term average of 0.4 mg/l. EPA concludes that this discharge does not have a reasonable potential to cause or contribute to an exceedance of the NH WQS for ammonia; therefore, no permit limit for ammonia has been included in the draft permit.

However, in receiving waters, the oxidation of ammonia by nitrifying bacteria depletes oxygen concentrations and can impact aquatic life. The Souhegan River (NHRIV700060906) downstream of the confluence with Purgatory Brook is listed as impaired for dissolved oxygen in the 2010 Section 303(d) Surface Water Quality List. Because of the concern for dissolved oxygen downstream of the discharge and the potential for ammonia concentrations to deplete dissolved oxygen, the draft permit requires quarterly monitoring and reporting of total ammonia as N.

7. Nutrients (Nitrogen and Phosphorus)

Nutrients are pollutants of concern in fish hatchery wastewater, and the current permit requires quarterly monitoring of total phosphorus to provide data to evaluate the impact of these pollutants on the quality of the receiving water in addition to monitoring of ammonia nitrogen. From June 2004 through November 2010, the maximum daily total phosphorus as P effluent values ranged from 0.05 to 1.00 mg/l with a long-term average of 0.15 mg/l.

There are currently no national or New Hampshire state numeric criteria for nutrient levels to control eutrophication in rivers and streams. Rather, NH WQS at Env-Wq 1703.14 require that "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring". Further, "existing discharges containing either phosphorus or nitrogen which encourages cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." In addition, EPA's *Quality Criteria for Water 1986* (Gold Book) recommends a maximum concentration of 0.1 mg/l for the prevention of nuisance algal growth in flowing waters. The DMR data summarized above and presented in Appendix C suggest that phosphorus concentrations in the effluent may exceed the recommended Gold Book concentration as a long-term average. However, Purgatory Brook is currently listed as "insufficient information/potentially attaining standards" for aquatic life on the current 303(d) Integrated List of Waters.

It is not clear, therefore, that potentially elevated levels of phosphorus from the Milford State Fish Hatchery are impairing designated uses of the waterbody by encouraging growth of algae. To ensure that narrative water quality standards are being met in Purgatory Brook, the draft permit requires ambient monitoring of total phosphorus, chlorophyll a, dissolved oxygen, and temperature during the algae growing season. According to EPA's Nutrient Criteria Technical Guidance Manual: Rivers and Streams (June 2000, EPA-822-B-00-002), chlorophyll a is a photosynthetic pigment and sensitive indicator of algal biomass, and is the primary biological response variable for nutrient-related problems. Enhanced algal growth (often associated with high temperatures) results in high rates of photosynthesis and respiration, which can lead to large variation in diurnal dissolved oxygen concentrations. Monitoring temperature and total phosphorus, chlorophyll a, and dissolved oxygen concentrations upstream and downstream of the hatchery's discharge will provide valuable data which EPA can then use to determine if the levels of phosphorus in the effluent are sufficiently protective of designated uses in the receiving water and ensure that the phosphorus contribution from this facility is not contributing to high algal biomass.

EPA and NHDES continue to expect that the ban on direct discharge of cleaning waters coupled with efficient feed management and feeding strategies (fish food has a phosphorus content that varies from 1.0 to 1.2 %) will minimize nutrient discharges from these sources. The draft permit requires year-round quarterly monitoring for total nitrogen as N, quarterly monitoring for total phosphorus as P between October and May. During the algal growing season from June through September, the draft permit requires monthly monitoring of total phosphorus at the outfall and ambient monitoring in the receiving water.

8. 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).

Flows from the hatchery make up a considerable portion of the stream flow in Purgatory Brook during many periods of the year, particularly during low-flow times when stream flow below the hatchery's outfall is effluent dominated. For example, during 7Q10 low-flow periods, stream flow in the Brook just above the outfall is estimated to be 0.307 CFS while the discharge from the hatchery is estimated to be 4.0 CFS or 93 % of the Brook's flow just below the outfall is composed of hatchery water. In addition, the degradation of any formalin in the water column requires oxygen, thus the potential for an additional depletion of oxygen over that required in the degradation of fish feces and uneaten food particles in the effluent. Accordingly, the draft permit requires monitoring of the effluent for dissolved oxygen concentration and calculation of dissolved oxygen percent saturation in the effluent for "formalin absent" and "formalin present" periods to see if this discharge causes or contributes to exceedances of the two part dissolved oxygen standard in Env-Wq 1703.0-7(b) in Purgatory Brook.

Dissolved oxygen levels of the Milford State Fish Hatchery's effluent between June 2004 and November 2010 ranged from a daily minimum of 7.5 to 12.0 mg/l. Dissolved oxygen saturation ranged from a daily minimum of 75 to 99 percent (%) saturation; with an average of 87 percent saturation. Dissolved oxygen levels never exceeded the minimum of 5 mg/l required in the WQS or minimum saturation of 75% (Env-Wq 1703.07(b)).

The draft permit continues to require monthly monitoring of the effluent for dissolved oxygen concentration and also requires special 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 WQS.

9. Formalin

CAAP facilities commonly use biocides, the most common of which are formalin products such as Paracide-F, Formalin-F or Parasite-S, which contain approximately 37 % by weight of formaldehyde gas. Formalin is used for the therapeutic treatment of fungal infections on the eggs of finfish and to control certain external protozoa and monogenetic trematodes on all finfish species. Because it is formulated to selectively kill or remove certain attached organisms, but not the finfish themselves when properly applied, formalin is more toxic to invertebrate species than to vertebrates. When setting the necessary permit limits to protect the receiving water's aquatic environment from the effects of formalin in a discharge, it is more important to develop limits to protect invertebrate species because they are more sensitive to the effects of formaldehyde. In the receiving waters, these invertebrates are an integral part of the food chain for finfish.

Formalin use must be consistent with 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 or INAD 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 WQS. 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)). Therefore, EPA 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) for formaldehyde are carried forward from the current 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. 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. Formalin was not administered at the facility between June 2004 and November 2010.

10. 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. 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. The draft permit includes two BMPs specific to Milford designed to reduce the potential for elevated phosphorus concentrations in the discharge: 1) to continue to use low phosphorus feed, and 2) to investigate the potential to implement a quiescent zone at the end of the west settling pond near Outfall 001 to discourage fish from disturbing settled solids near the Outfall.

Three additional BMP Plan categories added to 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). These 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 water 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 the 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, basins, and production systems.

VII. 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 permit modification and/or reissuances that sufficiently monitor an effluent discharge so both the environmental and human health are protected. Compliance monitoring frequency and sample type have been set 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.

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	Meter or other approved method	**Continuous**	**Flow Meter**
pH (L)	1/Week	Grab	1/Week	Grab
BOD_5 (M)	During 2005, 1/Month for 10 months and 1/Week for 2 months; thereafter 2/year	Grab/ Calculation	**1/Quarter**	Grab
TSS (L)	1/Month except January and July 2005 when 1/week	Grab/ Calculation	**1/Quarter**	Grab
Total Ammonia (M)	During 2005, 1/Month for 10 months and 1/Week for 2 months; thereafter 2/year	Grab/ Calculation	**1/Quarter**	Grab
Total Phosphorus as P (M)	During 2005, 1/Month for 10 months and 1/Week for 2 months; thereafter 2/year	Grab/ Calculation	**1/Quarter Oct-May; 1/Month June - Sep**	Grab

Total Phosphorus as P– Receiving Water (M)	**Not Required**	**Not Required**	**1/Month June to Sep**	**Grab**
Chlorophyll a – Receiving Water (M)	**Not Required**	**Not Required**	**1/Month June to Sep**	**Grab**
Chlorine (L) (When in Use)	**Not Required**	**Not Required**	**1/Day**	**Grab**
Hydrogen Peroxide (L) (When in Use)	**Not Required**	**Not Required**	**1/Day**	**Grab**
Dissolved Oxygen (M) (Formalin Absent)	1/Week	Grab	1/Month	Grab
Dissolved Oxygen Saturation (M)	1/Week	Calculation	1/Month	Calculation
Water Temperature (M) (Formalin Absent)	1/Week	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 (M)	Monthly	Calculation	Monthly	Calculation
Fish Feed Used (M)	Monthly	Calculation	Monthly	Calculation
Efficiency of Fish Feed Used (M)	Monthly	Calculation	Monthly	Calculation

VIII. 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.

There are no endangered species resident in Purgatory Brook or the Souhegan River. The EPA, therefore, does not have to consult with the USFWS.

IX. 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.

Purgatory Brook is a tributary of the Souhegan River, which is a tributary of the Merrimack River and, as such, these streams are designated EFH for Atlantic salmon (*Salmo salar*) because the Merrimack River has been designated EFH status for Atlantic salmon ".....including all tributaries to the extent they are currently or were historically accessible for salmon migration." According to the NHF&GD, in the past salmon sac fry were stocked in main stem of the Souhegan River from the dam in Greenville, NH (upstream of the confluence with Purgatory Brook) to its mouth except for a few isolated stretches, as well as in three tributary streams (Blood, King, and Stony Brooks). Purgatory Brook was not stocked because the habitat is unsuitable due to a lack of slope and presence of sand and fines in the substrate. According to the 2009 annual NHF&GD stocking report, no Atlantic salmon fry were stocked in the Souhegan River in 2009.

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 limitations on the discharge of formalin, total residual chlorine, and peroxide 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 both NMFS and USFWS.

X. 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 can not 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.

XI. 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 WQS 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.

XII. 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 NHDES. 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.

XIII. EPA Contact

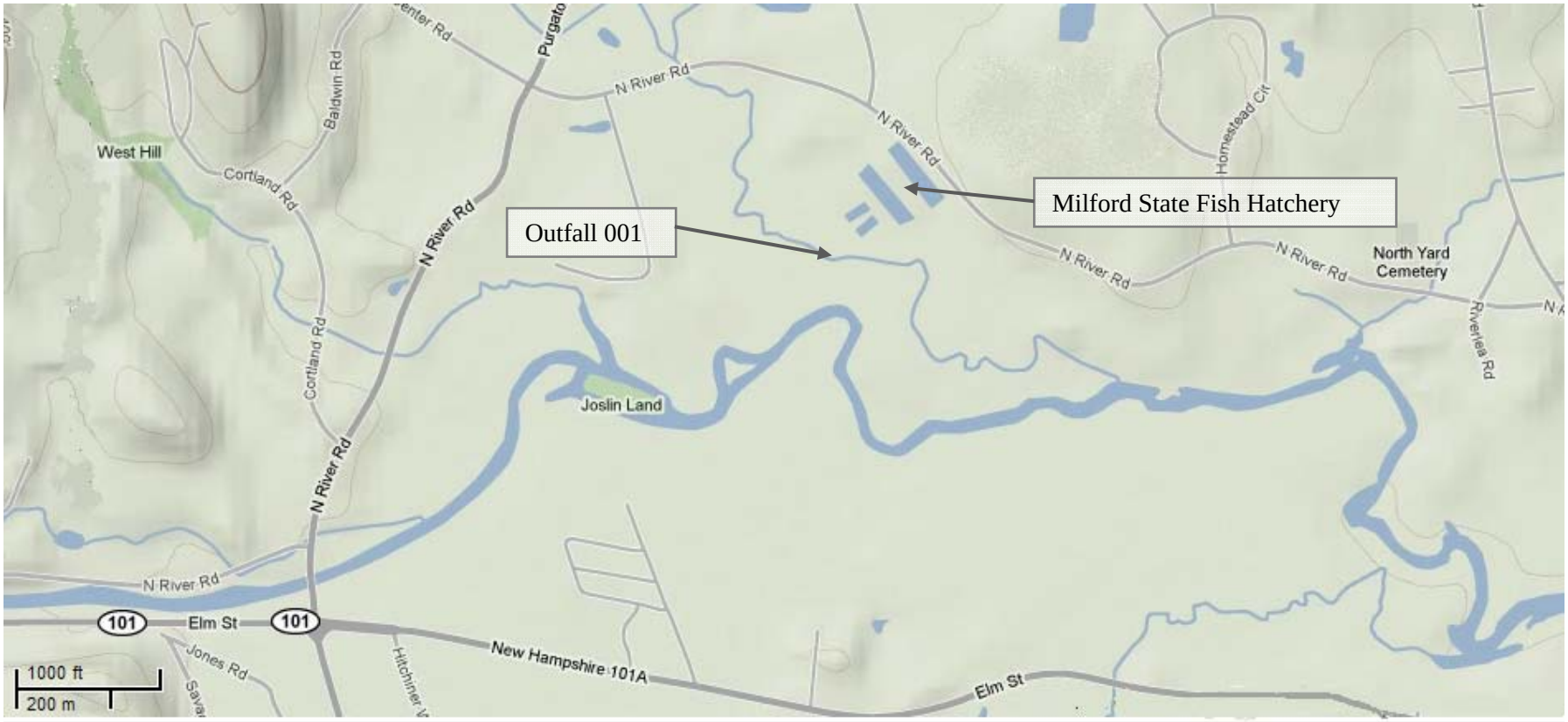
Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

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

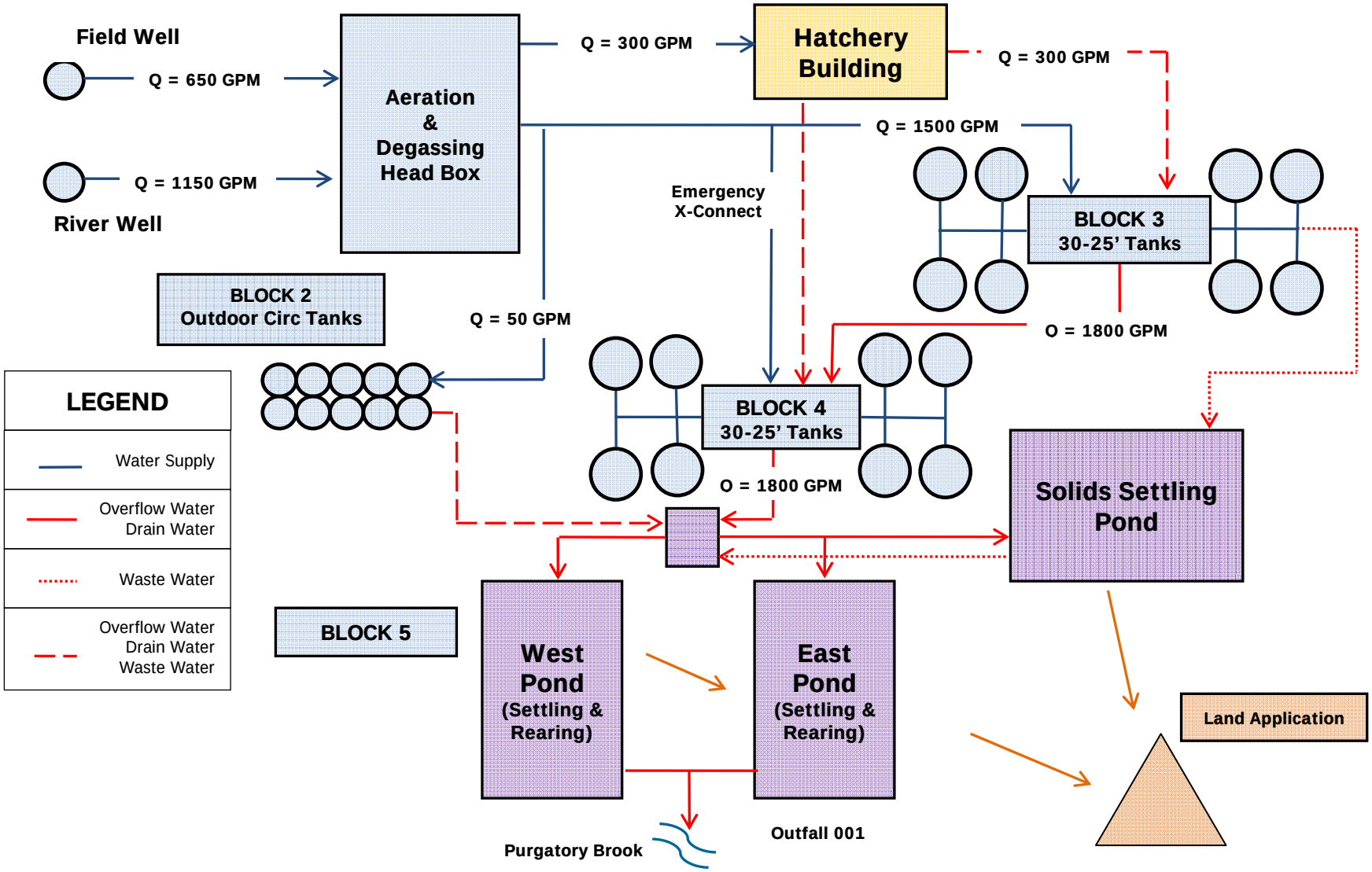
Date: May 4, 2011

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

Attachment A
Map Location of Milford State Fish Hatchery
and Outfall 001



Attachment B
Milford State Fish Hatchery Water Supply and Drain Diagram



Attachment C
Discharge Monitoring Report Summary
June 2004 – November 2010

Discharge monitoring summaries are presented for Outfall 001 and calculations based on the fish metabolic byproduct model (Monitoring Location O).

Abbreviations: CL = conditional limit (applied when Formalin in use)

Outfall 001											
	Fish food fed per day (lb/d)	Fish on hand (lb/d)	DO (mg/l)	DO % Sat	pH (s.u.)		TSS (lb/d)		TSS (mg/l)		Temp (deg F)
Date	Mo Avg	Mo Avg	Daily Min	Daily Min	Min	Max	Mo Avg	Daily Max	Mo Avg	Daily Max	Daily Max
6/30/2004	213.8	667.2	10.5		6.5	6.6	105.0	105.0	5.0	5.0	61.2
7/31/2004	309.8	993.3	8.5		6.5	6.5	42.0	42.0	2.0	2.0	61.5
8/31/2004	414.7	1508.0	8.7		6.5	6.5	42.0	42.0	0.0	0.0	65.1
9/30/2004	512.1	2195.0	7.5		6.5	6.5	0.0	0.0	0.0	0.0	62.1
10/31/2004	489.7	2718.0	7.6		6.5	6.5	0.0	0.0	0.0	0.0	60.1
11/30/2004	496.2	3048.0	7.5		6.5	6.5	63.0	63.0	3.0	3.0	53.4
12/31/2004	478.2	3582.0	10.0		6.5	6.5	42.0	42.0	2.0	2.0	50.1
1/31/2005	353.8	4040.0	11.2		6.5	6.5	94.5	147.1	2.0	7.0	45.3
2/28/2005	349.3	4689.0	11.5		6.5	6.5	0.0	0.0	0.0	0.0	41.0
3/31/2005	358.0	4650.0	11.4		6.5	6.5	42.0	42.0	2.0	2.0	41.9
4/30/2005	284.0	3371.0	9.5		6.5	6.5	84.0	84.0	4.0	4.0	44.0
5/31/2005	271.0	1964.0	10.5		6.5	6.5	0.0	0.0	0.0	0.0	49.0
6/30/2005	222.6	932.9			6.5	6.5	63.0	63.0	3.0	3.0	55.0
7/31/2005	229.8	1157.0	7.8		6.5	6.5	52.6	84.0	2.0	4.0	58.0
8/31/2005	334.8	1645.0	7.5		6.5	6.5	0.0	0.0	0.0	0.0	60.0
9/30/2005	407.4	2075.0	7.9		5.7	6.5	84.0	84.0	4.0	4.0	6.2
10/31/2005	391.1	2387.0	8.0		5.7	5.9	42.0	42.0	2.0	2.0	60.0
11/30/2005	416.7	3096.0	9.2		6.1	6.2	42.0	42.0	2.0	2.0	59.0
12/31/2005	402.0	3389.0	9.0		6.1	6.2	42.0	42.0	2.0	2.0	49.0
1/31/2006	422.5	3758.0	9.2		6.2	6.3	42.0	42.0	2.0	2.0	45.8

	Fish food fed per day (lb/d)	Fish on hand (lb/d)	DO (mg/l)	DO % Sat	pH (s.u.)		TSS (lb/d)		TSS (mg/l)		Temp (deg F)
2/28/2006	380.8	4981.0	9.2		6.2	6.3	42.0	42.0	2.0	2.0	42.0
3/31/2006	421.0	3993.0	11.4		6.1	6.3	42.0	42.0	2.0	2.0	43.0
4/30/2006	275.1	2541.0	11.4		6.1	6.3	63.0	63.0	3.0	3.0	45.0
5/31/2006	173.7	1255.0	11.0	85.2	6.2	6.3	42.0	42.0	2.0	2.0	52.0
6/30/2006	255.9	832.5	9.1	81.2	6.3	6.5	42.0	42.0	2.0	2.0	58.0
7/31/2006	350.6	1202.0	9.2	83.5	6.3	6.4	42.0	42.0	2.0	2.0	61.0
8/31/2006	422.9	1711.0	CL	83.2	6.4	6.4	47.3	47.3	3.1	3.1	63.0
9/30/2006	494.3	2332.0	8.4	83.0	6.3	6.4	42.0	42.0	2.0	2.0	60.0
10/31/2006	497.5	2409.0	8.5	80.0	6.2	6.3	42.0	42.0	2.0	2.0	60.0
11/30/2006	418.9	2935.0	8.1	78.6	6.2	6.3	42.0	42.0	2.0	2.0	55.0
12/31/2006	408.3	3513.0	10.5	89.0	5.9	6.1	63.0	63.0	3.0	3.0	49.0
1/31/2007	366.6	3814.0	10.4	83.2	6.0	6.3	42.0	42.0	2.0	2.0	47.0
2/28/2007	374.3	4340.0	9.3	79.0	6.1	6.3	63.0	63.0	3.0	3.0	43.0
3/31/2007	381.7	4409.0	CL	79.7	6.1	6.2	120.8	120.8	8.0	8.0	43.0
4/30/2007	246.8	3452.0	9.3		6.1	6.3	42.0	42.0	2.0	2.0	43.0
5/31/2007	207.5	1592.0		82.7	6.1	6.3	42.0	42.0	2.0	2.0	55.0
6/30/2007	172.0	500.0		81	6.1	6.5	42.0	42.0	2.0	2.0	57.0
7/31/2007	219.8	708.0		86.9	6.3	6.6	42.0	42.0	2.0	2.0	64.2
8/31/2007	326.4	987.0		87.5	5.8	6.6	0.0	0.0	0.0	0.0	62.8
9/30/2007	378.5	1355.7		78.1	6.0	6.4	42.0	42.0	2.0	2.0	63.1
10/31/2007	382.8	1602.3		84.5	6.2	6.4	42.0	42.0	2.0	2.0	58.5
11/30/2007	401.0	2091.8		87.6	5.9	6.2	42.0	42.0	2.0	2.0	52.7
12/31/2007	402.0	2406.0		83.1	5.9	6.5	42.0	42.0	2.0	2.0	50.2
1/31/2008	398.5	3010.9	10.0	83.7	5.8	6.3	0.0	0.0	0.0	0.0	45.1
2/29/2008	382.5	3656.2	10.5	86.0	6.1	6.4	0.0	0.0	0.0	0.0	45.1
3/31/2008	275.6	3889.1	10.6	80.2	6.1	6.3	0.0	0.0	0.0	0.0	44.8
4/30/2008	221.3	2664.1	11.1	99.1	6.0	6.4	0.0	0.0	0.0	0.0	50.2
5/31/2008	184.6	1338.7	11.2	98.3	6.0	6.2	0.0	0.0	0.0	0.0	55.4
6/30/2008	150.8	504.8	10.0	95.7	6.0	6.1	0.0	0.0	0.0	0.0	58.2
7/31/2008	193.3	642.4	9.4	93.0	6.0	6.3	0.0	0.0	0.0	0.0	62.8
8/31/2008	258.2	849.1	8.8	89.9	6.0	6.3	0.0	0.0	0.0	0.0	62.4
9/30/2008	315.8	1183.3	8.4	85.0	6.1	6.2	0.0	0.0	0.0	0.0	62.0
10/31/2008	335.4	1605.2	9.4	87.1	6.0	6.1	0.0	0.0	0.0	0.0	59.0
11/30/2008	297.7	2042.1	10.8	90.8	6.1	6.1	0.0	0.0	0.0	0.0	55.4
12/31/2008	275.0	2235.3	11.3	92.8	6.1	6.2	168.1	168.1	8.0	8.0	46.4

	Fish food fed per day (lb/d)	Fish on hand (lb/d)	DO (mg/l)	DO % Sat	pH (s.u.)		TSS (lb/d)		TSS (mg/l)		Temp (deg F)
1/31/2009	263.9	2629.9	11.9	93.3	6.0	6.1	0.0	0.0	0.0	0.0	42.6
2/28/2009	272.5	3328.6	11.9	92.5	6.0	6.1	0.0	0.0	0.0	0.0	42.3
3/31/2009	262.1	3202.6	12.0	93.5	6.0	6.1	42.0	42.0	2.0	2.0	41.4
4/30/2009	182.3	1983.7	11.7	96.8	6.0	6.1	0.0	0.0	0.0	0.0	46.8
5/31/2009	187.8	894.8	11.4	97.2	6.0	6.1	0.0	0.0	0.0	0.0	53.8
6/30/2009	181.5	520.5	10.5	94.3	6.0	6.1	42.0	42.0	2.0	2.0	54.7
7/31/2009	249.2	718.6	9.2	89.6	6.0	6.2	63.1	63.1	3.0	3.0	60.4
8/31/2009	288.1	1051.7	7.8	76.5	6.0	6.1	0.0	0.0	0.0	0.0	63.9
9/30/2009	395.2	1581.3	7.5	74.8	6.0	6.1	0.0	0.0	0.0	0.0	60.6
10/31/2009	423.7	1829.9	8.3	76.2	6.0	6.0	0.0	0.0	0.0	0.0	56.3
11/30/2009	386.7	1927.0	9.1	81.7	6.0	6.0	63.1	63.1	3.0	3.0	52.3
12/31/2009	397.7	2238.8	10.4	82.7	6.0	6.0	63.1	63.1	3.0	3.0	50.3
1/31/2010	342.3	2686.1	10.9	86.4	6.0	6.0	0.0	0.0	0.0	0.0	42.8
2/28/2010	357.1	3234.5	10.7	83.6	6.0	6.0	0.0	0.0	0.0	0.0	42.1
3/31/2010	380.4	3412.4	10.7	83.5	6.0	6.0	0.0	0.0	0.0	0.0	41.1
4/30/2010	233.8	2410.8	10.1	88.8	5.9	6.2	42.0	42.0	2.0	2.0	50.0
5/31/2010	222.0	1421.0	9.9	86.5	6.1	6.3	0.0	0.0	0.0	0.0	56.4
6/30/2010	175.0	423.0	9.5	93.7	6.4	6.6	0.0	0.0	0.0	0.0	59.5
7/31/2010	201.8	668.0	9.0	92.3	6.5	6.7	0.0	0.0	0.0	0.0	65.3
8/31/2010	276.0	1056.0	8.4	89.3	6.6	6.7	0.0	0.0	0.0	0.0	67.6
9/30/2010	369.0	1493.0	7.9	83.3	6.3	6.5	0.0	0.0	0.0	0.0	66.7
10/31/2010	371.7	1978.0	8.7	85.5	6.4	6.6	1303.0	1303.0	62.0	62.0	60.3
11/30/2010	365.6	2441.0	9.4	84.7	6.4	6.5	63.1	63.1	3.0	3.0	56.5

Outfall 001												
	BOD_5 (lbs/day)		BOD_5 (mg/l)		Nitrogen (lbs/day)		Nitrogen (mg/l)		Phosphorus (lbs/day)		Phosphorus (mg/l)	
Date	Mo Avg	Daily Max	Mo Avg	Daily Max	Mo Avg	Daily Max	Mo Avg	Daily Max	Mo Avg	Daily Max	Daily Max	Mo Avg
6/30/2004	126.1	126.1	6.0	6.0	5.9	5.9	0.3	0.3	1.9	1.9	0.1	0.1
7/31/2004	63.1	63.1	3.0	3.0	18.9	18.9	0.9	0.9	2.3	2.3	0.1	0.1
8/31/2004	63.0	63.0	3.0	3.0	11.1	11.1	0.5	0.5	3.2	3.2	0.2	0.2
9/30/2004	84.1	84.1	4.0	4.0	15.5	15.5	0.7	0.7	5.0	5.0	0.2	0.2
10/31/2004	63.0	63.0	3.0	3.0	10.2	10.2	0.5	0.5	5.0	5.0	0.2	0.2
11/30/2004	63.0	63.0	3.0	3.0	8.8	8.8	0.4	0.4	3.2	3.2	0.2	0.2
12/31/2004	0.0	0.0	0.0	0.0	13.2	13.2	0.6	0.6	3.8	3.8	0.2	0.2
1/31/2005	68.3	84.0	3.0	4.0	9.7	12.8	0.2	0.6	3.8	5.0	0.1	0.2
2/28/2005	84.0	84.0	4.0	4.0	8.4	8.4	0.4	0.4	7.1	7.1	0.3	0.3
3/31/2005	63.0	63.0	3.0	3.0	10.5	10.5	0.5	0.5	3.4	3.4	0.2	0.2
4/30/2005	84.0	84.0	4.0	4.0	8.4	8.4	0.4	0.4	3.4	3.4	0.2	0.2
5/31/2005	0.0	0.0	0.0	0.0	1.0	1.0	0.3	0.3	1.8	1.8	0.1	0.1
6/30/2005	0.0	0.0	0.0	0.0	8.6	8.6	0.4	0.4	2.5	2.5	0.1	0.1
7/31/2005	63.0	63.0	3.0	3.0	5.5	9.6	0.1	0.5	3.2	4.6	0.1	0.2
8/31/2005	63.0	63.0	3.0	3.0	9.0	9.0	0.4	0.4	2.9	2.9	0.1	0.1
9/30/2005	63.0	273.2	3.0	13.0	9.2	9.2	0.4	0.4	3.3	3.3	0.2	0.2
10/31/2005	63.0	63.0	3.0	3.0	10.2	10.2	0.5	0.5	4.0	4.0	0.2	0.2
11/30/2005	63.0	63.0	3.0	3.0	11.7	11.7	0.6	0.6	2.7	2.7	0.1	0.1
12/31/2005	63.0	63.0	3.0	3.0	8.8	8.8	0.4	0.4	3.3	3.3	0.2	0.2
1/31/2006	63.0	63.0	3.0	3.0	1.0	1.0	0.1	0.1	2.5	2.5	0.1	0.1
2/28/2006	84.0	84.0	4.0	4.0	11.1	11.1	0.5	0.5	3.2	3.2	0.2	0.2
3/31/2006	84.0	84.0	4.0	4.0	12.6	12.6	0.6	0.6	2.7	2.7	0.1	0.1
4/30/2006	84.0	84.0	4.0	4.0	5.3	5.3	0.3	0.3	2.7	2.7	0.1	0.1
5/31/2006	126.3	126.3	6.0	6.0	4.0	4.0	0.2	0.2	2.7	2.7	0.1	0.1
6/30/2006	63.0	63.0	3.0	3.0	5.9	5.9	0.3	0.3	1.9	1.9	0.1	0.1
7/31/2006	63.0	63.0	3.0	3.0	8.2	8.2	0.4	0.4	2.7	2.7	0.1	0.1
8/31/2006	75.0	75.0	5.0	5.0	11.2	11.2	0.1	0.1	1.0	1.0	0.1	0.1
9/30/2006	84.0	84.0	4.0	4.0	12.1	12.1	0.6	0.6	4.4	4.4	0.2	0.2
10/31/2006	63.0	63.0	3.0	3.0	4.2	4.2	0.2	0.2	2.7	2.7	0.1	0.1
11/30/2006	63.0	63.0	3.0	3.0	8.8	8.8	0.4	0.4	4.0	4.0	0.2	0.2
12/31/2006	84.0	84.0	4.0	4.0	10.0	10.0	0.5	0.5	3.8	3.8	0.2	0.2
1/31/2007	63.0	63.0	3.0	3.0	4.6	4.6	0.2	0.2	2.9	2.9	0.1	0.1
2/28/2007	84.0	84.0	4.0	4.0	8.2	8.2	0.4	0.4	2.5	2.5	0.1	0.1
3/31/2007	191.6	191.6	12.7	12.7	28.6	28.6	1.9	1.9	2.6	2.6	0.2	0.2
4/30/2007	63.0	63.0	3.0	3.0	3.5	3.5	0.2	0.2	2.1	2.1	0.1	0.1
5/31/2007	63.0	63.0	3.0	3.0	5.9	5.9	0.3	0.3	1.5	1.5	0.1	0.1
6/30/2007	63.0	63.0	3.0	3.0	4.4	4.4	0.2	0.2	1.3	1.3	0.1	0.1

	BOD_5 (lbs/day)		BOD_5 (mg/l)		Nitrogen (lbs/day)		Nitrogen (mg/l)		Phosphorus (lbs/day)		Phosphorus (mg/l)	
7/31/2007	63.0	63.0	3.0	3.0	3.6	3.6	0.2	0.2	1.9	1.9	0.1	0.1
8/31/2007	0.0	0.0	0.0	0.0	10.7	10.7	0.5	0.5	1.9	1.9	0.1	0.1
9/30/2007	0.0	0.0	0.0	0.0	12.0	12.0	0.6	0.6	2.5	2.5	0.1	0.1
10/31/2007	0.0	0.0	0.0	0.0	2.3	2.3	0.1	0.1	1.7	1.7	0.1	0.1
11/30/2007	63.0	63.0	3.0	3.0	9.7	9.7	0.5	0.5	2.3	2.3	0.1	0.1
12/31/2007	63.0	63.0	3.0	3.0	6.1	6.1	0.3	0.3	2.3	2.3	0.1	0.1
1/31/2008	0.0	0.0	0.0	0.0	7.8	7.8	0.4	0.4	2.3	2.3	0.1	0.1
2/29/2008	0.0	0.0	0.0	0.0	4.8	4.8	0.2	0.2	2.3	2.3	0.1	0.1
3/31/2008	84.0	84.0	4.0	4.0	6.5	6.5	0.3	0.3	2.7	2.7	0.1	0.1
4/30/2008	0.0	0.0	0.0	0.0	5.7	5.7	0.3	0.3	1.7	1.7	0.1	0.1
5/31/2008	0.0	0.0	0.0	0.0	5.7	5.7	0.3	0.3	1.5	1.5	0.1	0.1
6/30/2008	0.0	0.0	0.0	0.0	5.5	5.5	0.3	0.3	2.1	2.1	0.1	0.1
7/31/2008	0.0	0.0	0.0	0.0	5.0	5.0	0.2	0.2	1.7	1.7	0.1	0.1
8/31/2008	0.0	0.0	0.0	0.0	9.2	9.2	0.4	0.4	0.4	0.4	0.1	0.1
9/30/2008	0.0	0.0	0.0	0.0	5.9	5.9	0.3	0.3	2.5	2.5	0.1	0.1
10/31/2008	0.0	0.0	0.0	0.0	10.3	10.3	0.5	0.5	3.2	3.2	0.2	0.2
11/30/2008	0.0	0.0	0.0	0.0	7.1	7.1	0.3	0.3	1.9	1.9	0.1	0.1
12/31/2008	0.0	0.0	0.0	0.0	5.5	5.5	0.3	0.3	4.4	4.4	0.2	0.2
1/31/2009	0.0	0.0	0.0	0.0	8.8	8.8	0.4	0.4	3.4	3.4	0.2	0.2
2/28/2009	0.0	0.0	0.0	0.0	8.0	8.0	0.4	0.4	2.7	2.7	0.1	0.1
3/31/2009	0.0	0.0	0.0	0.0	7.6	7.6	0.4	0.4	2.5	2.5	0.1	0.1
4/30/2009	0.0	0.0	0.0	0.0	6.7	6.7	0.3	0.3	1.9	1.9	0.1	0.1
5/31/2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	0.1	0.1
6/30/2009	0.0	0.0	0.0	0.0	3.4	3.4	0.2	0.2	4.2	4.2	0.2	0.2
7/31/2009	0.0	0.0	0.0	0.0	7.8	7.8	0.4	0.4	3.4	3.4	0.2	0.2
8/31/2009	0.0	0.0	0.0	0.0	7.8	7.8	0.4	0.4	3.8	3.8	0.2	0.2
9/30/2009	0.0	0.0	0.0	0.0	10.3	10.3	0.5	0.5	3.2	3.2	0.2	0.2
10/31/2009	0.0	0.0	0.0	0.0	5.9	5.9	0.3	0.3	4.4	4.4	0.2	0.2
11/30/2009	63.0	63.0	3.0	3.0	5.3	5.3	0.3	0.3	4.0	4.0	0.2	0.2
12/31/2009	105.1	105.1	5.0	5.0	12.4	12.4	0.6	0.6	4.8	4.8	0.2	0.2
1/31/2010	63.0	63.0	3.0	3.0	9.0	9.0	0.4	0.4	2.9	2.9	0.1	0.1
2/28/2010	0.0	0.0	0.0	0.0	10.5	10.5	0.5	0.5	2.3	2.3	0.1	0.1
3/31/2010	0.0	0.0	0.0	0.0	9.6	9.6	0.5	0.5	2.3	2.3	0.1	0.1
4/30/2010	0.0	0.0	0.0	0.0	6.7	6.7	0.3	0.3	1.9	1.9	0.1	0.1
5/31/2010	0.0	0.0	0.0	0.0	8.0	8.0	0.4	0.4	1.1	1.1	0.1	0.1
6/30/2010	0.0	0.0	0.0	0.0	5.7	5.7	0.3	0.3	1.7	1.7	0.1	0.1
7/31/2010	0.0	0.0	0.0	0.0	7.2	7.2	0.3	0.3	2.9	2.9	0.1	0.1
8/31/2010	0.0	0.0	0.0	0.0	4.2	4.2	0.2	0.2	21.0	21.0	1.0	1.0
9/30/2010	0.0	0.0	0.0	0.0	9.7	9.7	0.5	0.5	2.1	2.1	0.1	0.1
10/31/2010	63.1	63.1	3.0	3.0	9.9	9.9	0.5	0.5	5.9	5.9	0.3	0.3
11/30/2010	0.0	0.0	0.0	0.0	6.3	6.3	0.3	0.3	2.5	2.5	0.1	0.1

Monitoring Location O (Calculation): Maximum Daily Value								
	TSS		BOD_5		Nitrogen		Phosphorus	
Date	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l
6/30/2004	64.16	3.05	72.71	3.45	6.84	0.33	1.07	0.05
7/31/2004	37.60	2.60	59.60	4.10	8.90	0.60	0.80	0.06
8/31/2004	50.10	3.40	79.50	5.40	11.90	0.80	1.10	0.07
9/30/2004	57.70	3.90	91.50	6.30	13.70	0.98	1.20	0.08
10/31/2004	56.20	3.80	89.20	6.10	13.30	0.90	1.20	0.08
11/30/2004	78.60	5.40	124.70	8.50	18.60	1.30	1.70	0.11
12/31/2004	53.90	3.70	85.60	5.80	12.80	0.90	1.20	0.08
1/31/2005	40.90	2.70	64.90	4.30	9.70	0.60	0.90	0.05
2/28/2005	78.50	5.20	124.50	8.30	18.60	1.20	1.70	0.11
3/31/2005	46.00	3.10	72.90	4.80	10.90	0.70	1.00	0.06
4/30/2005	47.50	3.20	75.40	5.00	11.30	0.70	1.00	0.06
5/31/2005	35.00	2.30	55.50	3.70	8.30	0.60	0.80	0.05
6/30/2005	33.40	2.20	53.00	3.50	7.90	0.50	0.70	0.04
7/31/2005	28.60	1.90	45.30	3.00	6.80	0.50	0.60	0.04
8/31/2005	34.50	2.30	54.70	3.60	8.20	0.50	0.70	0.04
9/30/2005	92.40	4.40	105.20	7.00	15.70	1.00	1.40	0.09
10/31/2005	43.10	2.90	68.40	4.50	10.20	0.70	0.90	0.06
11/30/2005	37.90	2.50	60.10	4.00	9.00	0.60	0.80	0.05
12/31/2005	60.30	4.00	95.70	6.40	14.30	1.00	1.30	0.08
1/31/2006	71.20	10.00	113.00	7.50	16.90	1.10	1.50	0.10
2/28/2006	26.50	10.00	42.10	2.80	6.30	0.40	0.60	0.03
3/31/2006	63.20	4.20	100.20	6.70	15.00	1.00	1.40	0.09
4/30/2006	100.60	6.70	159.70	10.60	23.90	1.60	2.20	0.14
5/31/2006	20.30	1.30	32.20	2.10	4.80	0.30	0.43	0.03
6/30/2006	38.40	2.60	60.90	4.00	9.10	0.60	0.08	0.05
7/31/2006	46.50	3.10	73.90	4.90	11.00	0.07	1.00	0.06
8/31/2006	42.00	2.00	63.00	3.00	9.20	0.44	3.70	0.18
9/30/2006	65.10	4.30	75.00	6.90	15.40	1.00	1.40	0.09
10/31/2006	72.50	4.80	115.10	7.60	17.20	1.10	1.60	0.10
11/30/2006	52.10	3.50	82.70	5.50	12.40	0.80	1.47	0.07
12/31/2006	37.30	2.50	59.10	3.90	8.80	0.60	0.80	0.05
1/31/2007	63.90	4.20	101.40	6.70	15.10	1.00	1.40	0.09
2/28/2007	56.90	3.80	90.20	6.00	13.50	0.90	1.20	0.08
3/31/2007	42.00	2.00	84.00	4.00	4.40	0.21	3.30	0.16

	TSS		BOD_5		Nitrogen		Phosphorus	
	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l
4/30/2007	25.10	1.70	39.90	2.60	6.00	0.40	0.50	0.03
5/31/2007	112.30	7.50	178.20	11.80	26.60	1.80	2.40	0.16
6/30/2007	25.80	1.70	41.00	2.70	6.10	0.40	0.60	0.03
7/31/2007	105.30	7.00	167.10	11.10	25.00	1.70	2.30	0.15
8/31/2007	42.40	2.80	67.30	4.50	10.10	0.51	0.90	0.06
9/30/2007	59.00	3.90	93.60	6.20	14.00	0.90	1.30	0.08
10/31/2007	43.10	2.90	68.40	4.50	10.20	0.70	0.90	0.06
11/30/2007	51.50	3.40	81.80	5.40	12.20	0.80	1.10	0.07
12/31/2007	72.30	4.80	114.70	7.60	17.10	1.10	1.60	0.10
1/31/2008	36.80	2.40	58.30	3.90	8.70	0.60	0.80	0.05
2/29/2008	52.00	3.50	82.50	5.50	12.30	0.80	1.10	0.08
3/31/2008	24.20	1.60	38.40	2.60	5.70	0.40	0.50	0.04
4/30/2008	18.90	1.30	30.00	2.00	4.50	0.30	0.40	0.03
5/31/2008	28.20	1.90	44.80	3.00	6.70	0.40	0.60	0.04
6/30/2008	22.60	1.50	35.90	2.40	5.40	0.40	0.50	0.03
7/31/2008	20.90	1.40	33.10	2.20	5.00	0.30	0.50	0.03
8/31/2008	34.50	2.30	54.80	3.60	8.20	0.50	0.70	0.05
9/30/2008	48.90	3.30	77.60	5.20	11.60	0.80	1.10	0.07
10/31/2008	32.60	2.20	51.70	3.40	7.70	0.50	0.70	0.05
11/30/2008	32.60	2.20	51.70	3.40	7.70	0.50	0.70	0.05
12/31/2008	43.80	2.90	69.50	4.60	10.40	0.70	0.90	0.06
1/31/2009	26.50	1.80	42.00	2.80	6.30	0.40	0.60	0.04
2/28/2009	23.20	1.50	36.80	2.40	5.50	0.40	0.50	0.03
3/31/2009	36.60	2.40	58.10	3.90	8.70	0.60	0.80	0.05
4/30/2009	18.20	1.20	28.80	1.90	4.30	0.30	0.40	0.03
5/31/2009	78.10	5.20	124.00	8.20	18.50	1.20	1.70	0.11
6/30/2009	27.20	1.80	43.20	2.90	6.50	0.40	0.60	0.04
7/31/2009	28.40	1.90	45.10	3.00	6.70	0.40	0.60	0.04
8/31/2009	37.40	2.50	59.30	3.90	8.90	0.60	0.80	0.05
9/30/2009	47.50	3.20	75.30	5.00	11.30	0.70	1.00	0.07
10/31/2009	81.30	5.40	128.90	8.60	19.30	1.30	1.80	0.12
11/30/2009	81.50	5.40	129.30	8.60	19.30	1.30	1.80	0.12
12/31/2009	62.70	4.20	99.50	6.60	14.90	1.00	1.40	0.09
1/31/2010	39.30	2.60	62.30	4.10	9.30	0.60	0.80	0.06
2/28/2010	73.40	4.90	116.50	7.70	16.00	1.10	1.60	0.10
3/31/2010	32.20	2.10	51.10	3.40	7.60	0.50	0.70	0.05
4/30/2010	20.40	1.40	32.30	2.10	4.80	0.30	0.40	0.03
5/31/2010	11.20	0.70	17.70	1.20	2.60	0.20	0.20	0.02

	TSS		BOD_5		Nitrogen		Phosphorus	
	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l	lbs/day	mg/l
6/30/2010	26.20	1.70	41.60	2.80	6.20	0.40	0.60	0.04
7/31/2010	25.40	1.70	40.30	2.70	6.00	0.40	0.50	0.04
8/31/2010	26.00	1.70	41.20	2.70	6.20	0.40	17.40	0.60
9/30/2010	49.10	3.30	77.90	5.20	11.60	0.80	31.80	1.10
10/31/2010	36.80	2.40	58.30	3.90	12.60	0.60	24.60	0.80
11/30/2010	36.70	2.40	58.20	0.00	8.70	0.60	0.80	0.05

SUMMARY			**Outfall 001**			**Location O (Calculation)**		
		2005 Limit	Min	Max	Average	Min	Max	Average
Fish food fed per day (lb/d)	Mo Avg	Report	150.8	512.1	325.5			
Fish on hand (lb/d)	Mo Avg	Report	423.0	4981.0	2225.4			
DO (mg/l)	Daily Min	Report	7.5	12.0	9.7			
DO % Sat	Daily Min	Report	74.8	99.1	86.8			
pH (s.u.)	Minimum	6	5.7	6.6	6.2			
	Maximum	8	5.9	6.7	6.3			
Temp (deg F)	Daily Max	Report	6.2	67.6	53.0			
BOD (lb/d)	Mo Avg	Report	0.0	191.6	40.7			
	Daily Max	Report	0.0	273.2	43.5	17.7	178.2	72.8
BOD (mg/l)	Mo Avg	Report	0.0	12.7	2.0			
	Daily Max	Report	0.0	13.0	2.1	1.2	11.8	4.8
TSS (lb/d)	Mo Avg	Report	0.0	168.1	32.5			
	Daily Max	Report	0.0	168.1	33.6	11.2	112.3	46.6
TSS (mg/l)	Mo Avg	10	0.0	8.0	1.5			
	Daily Max	15	0.0	8.0	1.6	0.7	10	3.2
N, ammonia (lb/d)	Mo Avg	Report	0.0	28.6	8.1			
	Daily Max	Report	0.0	28.6	8.1	2.6	44.6	11.2
N, ammonia (mg/l)	Mo Avg	Report	0.0	1.9	0.4			
	Daily Max	Report	0.0	1.9	0.4	0.07	1.8	0.7
Phosphorus (lb/d)	Mo Avg	Report	0.4	21.0	3.1			
	Daily Max	Report	0.4	21.0	3.1	0.08	31.8	1.97
Phosphorus (mg/l)	Mo Avg	Report	0.1	1.0	0.1			
	Daily Max	Report	0.1	1.0	0.1	0.02	1.1	0.1