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

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

to receiving water named

Merrymeeting River
Hydrologic Basin Code 01070002

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

This permit shall become effective on January 1, 2021.[1]

This permit expires at midnight, on December 31, 2025.

This permit supersedes the permit issued on December 22, 2011.

This permit consists of this **cover page**, **Part I** and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this 13th day of October, 2020

/S/Signature On File
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

1 Pursuant to 40 Code of Federal Regulations (C.F.R.) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the Permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 C.F.R. § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge culture water and treated hatchery effluent through Outfall Serial Number 001 to Merrymeeting River. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	Effluent Limitation		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Effluent Flow[6]	2.0 MGD	Report	1/day	Meter
Total Suspended Solids (TSS)	Report lbs/d Report mg/L	Report lbs/d 10 mg/L[7]	1/week	Composite
Biochemical Oxygen Demand (BOD_5)	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
pH[8]	6.5 - 8.0 S.U.		1/week	Grab
Ambient pH[8]	Report S.U.		1/week	Grab
Total Ammonia as N	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/month	Composite
Total Nitrogen	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
Total Phosphorus [9]	Report lbs/d 12 µg/L	Report lbs/d Report µg/L	1/week	Composite
Dissolved Oxygen[12]	Report Minimum mg/L		1/week	Grab
Dissolved Oxygen Saturation[12]	Report Minimum %		1/week	Grab

Effluent Characteristic	Effluent Limitation		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Effluent Temperature[12]	Report °F		1/week	Grab
Fish Biomass on Hand	Report lbs/d	---	1/month	Calculation
Fish Feed Used	Report lbs/d	Report lbs/d	1/month	Calculation
Fish Feed Efficiency[13]	Report	---	1/month	Calculation
Total Residual Chlorine (when in use)[14]	11 µg/L	19 µg/L	1/day	Grab
Hydrogen Peroxide (when in use)	---	0.7 mg/L	1/day	Grab
Formaldehyde (Formalin in use)[15, 16]	1.6 mg/L	4.6 mg/L	1/day	Grab
Dissolved Oxygen (Formalin in use)[15]	Report Minimum mg/L		1/day	Grab

2. 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 through Outfall Serial Number 002 to Merrymeeting River. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	Effluent Limitation		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Effluent Flow[6]	4.2 MGD	Report	1/day	Meter
Total Suspended Solids (TSS)	Report lbs/d Report mg/L	Report lbs/d 10 mg/L[7]	1/week	Composite
Biochemical Oxygen Demand (BOD_5)	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
pH[8]	6.5 - 8.0 S.U.		1/week	Grab
Ambient pH[8]	Report S.U.		1/week	Grab
Total Ammonia as N	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/month	Composite
Total Nitrogen	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
Total Phosphorus[9]	Report lbs/d 12 µg/L	Report lbs/d Report µg/L	1/week	Composite
Dissolved Oxygen[12]	Report Minimum mg/L		1/week	Grab
Dissolved Oxygen Saturation[12]	Report %		1/week	Grab
Effluent Temperature[12]	Report °F		1/week	Grab
Fish Biomass on Hand	Report lbs/d	---	1/month	Calculation

Effluent Characteristic	Effluent Limitation		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Fish Feed Used	Report lbs/d	Report lbs/d	1/month	Calculation
Fish Feed Efficiency[13]	Report	---	1/month	Calculation
Total Residual Chlorine (when in use)[14]	11 µg/L	19 µg/L	1/day	Grab
Hydrogen Peroxide (when in use)	---	0.7 mg/L	1/day	Grab
Formaldehyde (when in use) [15,16]	1.6 mg/L	4.6 mg/L	1/day	Grab
Dissolved Oxygen (when in use)[15]	Report Minimum mg/L		1/day	Grab

3. 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 through Outfall Serial Number SUM, which is the calculated cumulative load from Outfall Serial Numbers 001 and 002 to Merrymeeting River. The cumulative discharge from both outfalls combined shall be limited and monitored as specified below; Marsh Pond shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitation**		**Monitoring Requirements[1,2,3]**	
	Annual Total	**Average Monthly**	**Measurement Frequency[4]**	**Sample Type[5]**
Total Phosphorus Load[10]	227 lbs/year	---	1/week	Calculation
Total Phosphorus Load	---	19 lbs/month		
Ambient Total Phosphorus[11] (May 1 to Oct 31)	---	Report µg/L	2/month	Grab
Ambient Total Nitrogen[11] (May 1 to Oct 31)	---	Report µg/L	2/month	Grab
Ambient Chlorophyll-a[11] (May 1 to Oct 31)	---	Report µg/L	2/month	Grab
Ambient Secchi Disc Transparency[11] (May 1 to Oct 31)	---	Report m	2/month	Grab

Footnotes for Parts I.A.1, I.A.2, and I.A.3:

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point to the receiving water after treatment, prior to co-mingling with any other wastestream. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA) and the State. The Permittee shall report the results to EPA and the State of any additional testing above that required herein, if testing is done in accordance with 40 C.F.R. § 136.

2. In accordance with 40 C.F.R. § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 or required under 40 C.F.R. chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). When calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of 1/day is defined as the recording of one measurement for each 24-hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Within a monthly reporting period, at least one weekly sample shall be collected on a day when raceway and/or tank cleaning operations are occuring. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Sampling of a parameter identified as "when in use" means that sampling is required only when the additive associated with that parameter is in use. If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

5. Each composite sample will consist of at least eight grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. Effluent flow shall be continuously measured and recorded using a flow meter and totalizer. Effluent flow shall be reported in million gallons per day (MGD).

7. If TSS exceeds the maximum daily benchmark of 10 mg/L, the Permittee shall evaluate its best management practices (BMPs) and implement corrective actions necessary to reduce the effluent concentration below the applicable benchmark. The maximum daily total suspended solids (TSS) value is a benchmark, not an effluent limitation. See Part I.C.3 of this Permit.

8. The pH shall be within the specified range at all times unless the ambient upstream pH in the receiving water is outside of this range, and is not altered by the discharge or activities. If the 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 that 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 to the DMR. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). When the pH range is less than the minimum of 6.5 S.U., the Permittee shall report the ambient, upstream pH. If the pH range is more than the minimum of 6.5 S.U., the Permittee shall report an appropriate No Data Indicator Code for ambient pH.

9. For the purposes of this permit, total phosphorus analysis must be completed using a test method in 40 C.F.R. § 136 that achieves a minimum level of detection no greater than 10 µg/L.

10. The cumulative, 12-month rolling net phosphorus load from Outfall 001 and 002 shall not exceed 227 pounds per year. The total loading values shall be calculated as follows: Total Phosphorus (lbs/month) = (average monthly total phosphorus concentration (mg/L) * total monthly effluent flow (millions of gallons) * 8.34. The annual net phosphorus load from Outfalls 001 and 002 shall be calculated by adding the previous eleven (11) months load plus the current month load at each outfall, and then adding the 12-month rolling load at the two outfalls.

11. The Permittee shall collect ambient total phosphorus, total nitrogen, and chlorophyll-a samples from the Deep Spot Marsh Pond sampling station twice per month between May 1 and October 31. Water quality sampling and analysis shall be in accordance with the methods described in the most recent NHDES Volunteer Lake Assessment Program Generic Quality

Assurance Project Plan available at www.des.nh.gov/organization/divisions/water/wmb/vlap/. The Permittee shall obtain secchi disk transparency depth readings without use of a viewscope concurrent with the twice monthly sampling events.

12. Dissolved oxygen samples shall be collected from a discharge without formalin present. Report the minimum daily concentration for the month and the percent saturation and effluent temperature that corresponds with the minimum daily value.

13. Monitoring for total residual chlorine (TRC) is only required for discharges when Chloramine-T is in use. For the purposes of this permit, TRC analysis must be completed using a test method in 40 C.F.R. § 136 that achieves a minimum level of detection no greater than 30 µg/L. The compliance level for TRC is 30 µg/L. The Permittee shall report TRC values less than the minimum level (<30 µg/L) as zero in the DMR.

14. "Fish Feed Efficiency" shall be calculated as the reciprocal of the Feed Conversion Ratio based on the monthly average pounds of fish feed fed and monthly average animal weight gain: Animal weight gain (pounds)/Feed given (pounds) * 100.

15. 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. When formalin is in use, a sample for dissolved oxygen 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.

16. Formaldehyde shall be tested using EPA Method 1667, Revision A or 8315A. The ML for formaldehyde is 50 µg/L.

Part I.A. continued.

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

5. The discharge shall be free from substances in kind or quantity that settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities.

6. Tainting substances shall not be present in the discharge in concentrations that individually or in combination are detectable by taste and odor tests performed on the edible portions of aquatic organisms.

7. The discharge shall not result in toxic substances or chemical constituents in concentrations or combinations in the receiving water that injure or are inimical to plants, animals, humans or aquatic life; or persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife that might consume aquatic life.

8. The discharge shall not result in benthic deposits that have a detrimental impact on the benthic community. The discharge shall not result in oil and grease, color, slicks, odors, or surface floating solids that would impair any existing or designated uses in the receiving water.

9. The discharge shall not result in an exceedance of the naturally occurring turbidity in the receiving water by more than 10 NTUs.

10. The Permittee shall notify EPA and the New Hampshire Department of Environmental Services (NHDES) within 24 hours upon the occurrence of any mortality 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 the reporting requirements in Part II.D.3 and 5.

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

12. 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.

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

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

(1) 100 micrograms per liter (µg/L);
(2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
(3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7); or
(4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f) and State regulations.

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

(1) 500 µg/L;
(2) One mg/L for antimony;
(3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7); or
(4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f) and State regulations.

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfalls listed in Part I.A.1 and Part I.A.2, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

2. The discharge of iodine and/or phosphoric acid solution(s) at the Facility to the receiving water is prohibited.

3. 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, or any raceway, pond, canal, circular tanks, 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.

C. SPECIAL CONDITIONS

1. Best Management Practices (BMPs)

a. 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.

(1) The permittee must provide to EPA and NHDES-WD a written report of impending INAD use within seven 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.

(2) 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 seven 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.

(3) For INADs and extra-label drug uses, the permittee must provide a written report to EPA and NHDES-WD within thirty (30) days after initiating use of that drug. The written report must identify the drug used and include: the reason for treatment, date(s) and time(s) of the addition (including duration), method of application, and the amount added.

b. 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.

(1) 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.

(2) The permittee must provide an oral report to EPA and NHDES-WD within 24 hours of discovery of any reportable failure as defined in Part I.C.1.b.1., above, 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.

(3) The permittee must provide a written report to EPA and NHDES-WD within five 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.

c. Spills

In the event of a spill of drugs, pesticides or feed 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 twenty-four (24) hours of its occurrence and a written report within five days to the above Agencies. The report shall include the identity and quantity of the material spilled.

2. Best Management Practices Plan (BMPP)

The permittee must continue to implement and maintain a BMP Plan (BMPP) upon the permit's effective date that describes how the following requirements will be achieved. The permittee will make the current version of that BMPP 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 BMPP 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 BMPP 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 BMPP. The permittee shall place in the BMPP a written documentation of each amended change along with a brief description stating the reason for the amendment, including the date the change triggering the amendment occurred. The permittee shall also document the date the amended BMPP was implemented.

a. The BMPP must address, at a minimum, the following requirements:

(1) 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. The Permittee shall use the lowest possible phosphorus feed practicable for each size and life stage of fish.

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.B.3. prohibits the direct discharge of cleaning water absent some form of solids removal prior to discharge.

iii. If any material is removed from the rearing units, settling tanks, and/or any treatment technology, describe where it is to be placed and the techniques used to prevent such material from re-entering the surface waters from any on-site storage. If the material is removed from the site, describe who received the material and its method of disposal and/or reuse.

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

(2) 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 is showing signs of stress.

(3) 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.

(4) 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.

(5) 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 BMPP to include the dosage concentration, frequency of application (hourly, daily, etc.), the duration (hours, days) of treatment, and the method of application.

(6) 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.

(7) Aquaculture Drugs and Chemicals Used for Disease Control and/or Prevention

List in the BMPP 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.).

3. Benchmark Requirements for Total Suspended Solids (TSS)

A benchmark value of 10 mg/L applies to total suspended solids (TSS) to ensure that the BMPs described above are effectively controlling discharges of pollutants from Outfalls 001 and 002. The TSS benchmark is not an effluent limitation. Concentrations exceeding this benchmark represent a level of concern requiring further evaluation of the BMPP to determine if the non-numeric, technology-based limits are effectively minimizing TSS concentrations in the discharge. If TSS monitoring results required in Part I.A.1 and I.A.2 of this Permit exceed a maximum daily benchmark value of 10 mg/L, the Permittee shall:

a. Investigate the cause of the elevated concentration and implement corrective actions necessary to reduce the effluent concentration of TSS below the applicable benchmark. Corrective actions shall be implemented as soon as possible, and the Permittee shall report compliance with the maximum daily TSS benchmark of 10 mg/L within 30 calendar days following the date of the exceedance. If implementation of the corrective actions is unable to be completed within this timeframe, the Permittee shall document the reason and provide an alternative schedule for implementing corrective actions to EPA and NHDES in writing within 30 calendar days following the date of the exceedance of the benchmark value.

b. Review the BMPP to determine if additional control measures or other changes are necessary to maintain TSS concentrations below the applicable benchmark. If additional control measures or other changes are necessary, the Permittee shall revise the BMPP and submit the revisions to EPA and NHDES, including any schedule to implement changes to control measures, within 30 days following the sampling date of the exceedance of the benchmark value.

4. Discharges of Chemicals and Additives

The Permittee shall only use aquaculture drugs and chemicals approved the U.S. Food and Drug Administration (USFDA) in accordance with labeling instructions or as allowed in Part I.C.1, above. EPA will defer to the USFDA regarding whether or not a particular drug, chemical, or additive is used in accordance with USFDA requirements. Each year as an attachment to the December DMR, the Permittee shall certify in writing that all aquaculture drugs and chemicals used during the calendar year were approved by the USFDA and were used in accordance with USFDA labeling or as allowed under Part C.1.a.

The discharge of any chemical or additive, including chemical substitution, which was not reported in the application submitted to EPA and the State or provided through a subsequent written notification submitted to EPA and the State, other than additives used in accordance with Part I.C.1, is prohibited. Upon the effective date of this permit, chemicals and/or additives which have been disclosed to EPA and the State or used in accordance with Part I.C.1 may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. With the exception of additives used in accordance with Part I.C.1, discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA and the State unless otherwise notified by EPA and/or the State. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA and the State in accordance with Part I.D.3 of this permit. The written notification must include the following information, at a minimum:

a. The following information for each new chemical and/or additive that will be discharged:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS), Chemical Abstracts Service (CAS) Registry number, and EPA registration number, if applicable, for each chemical/additive;
(4) The frequency (e.g., daily), magnitude (i.e., maximum application concentration), duration (e.g., hours), and method of application for the chemical/additive;
(5) The maximum discharge concentration; and
(6) The vendor's reported aquatic toxicity, if available (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)).

b. Written rationale which demonstrates that the discharge of such chemicals and/or additives as proposed will not: 1) will not add any pollutants in concentrations which exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

5. Nitrogen Optimization Strategy

a. The Permittee shall optimize facility operations relative to total nitrogen (TN) in order to minimize the annual average mass discharge of TN. Within one year of the effective date of the Permit, the Permittee shall complete an assessment of BMPs, operational changes, and/or improvements to existing BMPs that will be implemented at the Facility to reduce the annual average mass discharge of TN, including potential reductions in TN that may be achieved with any wastewater treatment system designed to meet the TP effluent limitations.

b. The Permittee shall submit an annual report to EPA and NHDES no later than February 1 following the completion of the initial assessment described in Part I.C.5.a and by February 1 each year after. The annual report shall summarize activities related to optimizing nitrogen removal efficiencies described in Part I.C.5.a, above, document the annual nitrogen load discharged from the facility, and track trends relative to the previous calendar year. If, in any year, the Facility discharges of TN have increased on an annual average basis, the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any operational changes. The report shall include all supporting data and revisions to the BMP Plan.

c. The annual nitrogen optimization reports and supporting materials shall be kept with the BMP Plan, including a record of the date of submission of each annual report in compliance with the requirement described in Part I.C.5.b, above.

D. REPORTING REQUIREMENTS

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

a. The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State no later than the 15th day of the month following the monitoring period electronically using NetDMR. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. *See* Part I.D.5. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this permit.

3. Submittal of Requests and Reports to EPA Water Division (WD)

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

(1) Transfer of Permit notice;
(2) Request for changes in sampling location;
(3) Notification of fish mortality;
(4) BMP reports and certifications, including reporting required by Part I.C.4;
(5) Request to discharge new chemicals or additives; and
(6) Request for pH Effluent Limitation Adjustment.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov or by hard copy mail to the following address:

U.S. Environmental Protection Agency
Water Division
NPDES Applications Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. Submittal of Reports in Hard Copy Form

a. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission:

(1) Prior to December 21, 2020, written notifications required under Part II. Starting on December 21, 2020, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

b. This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section

5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

5. State Reporting

Unless otherwise specified in this permit or by the State, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.D.3 through I.D.6 shall also be submitted to the New Hampshire Department of Environmental Services, Water Division (NHDES–WD) electronically to the Permittee's assigned NPDES inspector at NHDES-WD or as a hardcopy to 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

6. Verbal Reports and Verbal Notifications

a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

b. Verbal reports and verbal notifications shall be made to EPA's Enforcement and Compliance Assurance Division at:

617-918-1510

c. Verbal reports and verbal notifications shall also be made to the State's Regional NPDES inspector at:

603-271-1494

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

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

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

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

condition.

3. Duty to Provide Information

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

4. Oil and Hazardous Substance Liability

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

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

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

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

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

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

7. Duty to Reapply

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

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

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

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

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

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

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

C. MONITORING REQUIREMENTS

1. Monitoring and Records

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

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

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

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

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

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

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

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

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

D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

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

c. *Transfers*. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

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

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

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

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

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

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

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

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

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any

relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

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

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

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

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

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

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

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

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

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

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

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

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

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

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

Discharge of a pollutant means:

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

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

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

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

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

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

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

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

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

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

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

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

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

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

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

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

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

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

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

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

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

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

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

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

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

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

NPDES means "National Pollutant Discharge Elimination System."

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

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

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

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

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

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

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

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

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

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

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

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

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

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

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

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

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

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

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

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

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

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

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

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

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

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

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

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

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

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

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

Waters of the United States or waters of the U.S. means:

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

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

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

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

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

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

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

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

(f) The territorial sea; and

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

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

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

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

RESPONSE TO COMMENTS

NPDES Permit No. NH0000710
Powder Mill State Fish Hatchery
New Durham, NH

The U.S. Environmental Protection Agency's New England Region (Region 1, EPA, the Agency) is issuing a Final National Pollutant Discharge Elimination System (NPDES) Permit for the Powder Mill State Fish Hatchery located in New Durham, New Hampshire. This permit is issued under the Federal Clean Water Act (CWA), 33 U.S.C., §§ 1251 et. seq.

In accordance with the provisions of 40 CFR §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit #NH0000710 (the "Draft Permit"). The Response to Comments explains and supports EPA's determinations that form the basis of the final permit (the "Final Permit"). From December 31, 2019 through February 14, 2020, EPA solicited public comments on the Draft Permit. A public hearing was held in New Durham, NH on February 5, 2020.

EPA received a number of comments from interested parties. A list of all parties that commented on the Draft Permit during the comment period or at the public hearing is included in Section II of this document.

Conservation Law Foundation (CLF) submitted additional "supplemental comments" on June 12, 2020 after the close of the public comment period. EPA has reviewed the submittal, but under applicable federal regulations, the permitting authority is only required to respond to significant comments submitted during the public comment period. 40 CFR § 124.17(a)(2). *See also Avon Custom Mixing Servs., Inc.*, 10 E.A.D. 700, 706 (EAB 2002); *City of Phoenix, Arizona Squaw Peak and Deer Valley Water Treatment Plants,* 9 E.A.D. 5151, 524-31 (EAB 2000); *Steel Dynamics, Inc*. 9 E.A.D. 165, 194 n.32 (EAB 2000). The permitting authority retains the discretion, however, to consider comments received after the close of the public comment period. *See Town of Newmarket*, 16 E.A.D. 182, 234 (EAB 2013) (*citing In re Upper Blackstone Pollution Control District*, 15 E.A.D. 297, 312 (EAB 2011), *aff'd*, (1st Cir. 2012), *cert. denied*, 133 S. Ct. 2382 (2013). Based on the unique circumstances of this permit and the fact that the supplemental comments were based on a Supreme Court decision issued after the close of the public comment period, EPA chose to respond to these comments.

Although EPA's decision-making process has benefited from the comments submitted, the information and arguments presented did not raise any substantial new questions concerning the permit that warrants EPA exercising its discretion to reopen the public comment period. EPA did, however, make certain changes in response to the public comments EPA received on the Draft Permit, listed in Part I, below. The analyses underlying these changes are explained in the responses to individual comments in Part II, below, and are reflected in the Final Permit. EPA maintains that the Final Permit is a "logical outgrowth" of the Draft Permit that was available for public comment.

A copy of the Final Permit and this response to comments document will be posted on the EPA Region 1 web site: https://www.epa.gov/npdes-permits/new-hampshire-final-individual-npdes-permits.

A copy of the Final Permit may be also obtained by writing or calling Danielle Gaito, U.S. EPA, 5 Post Office Square, Suite 100 (Mail Code: 06-4), Boston, MA 02109-3912; Telephone: (617) 918-1297; Email gaito.danielle@epa.gov.

Table of Contents

I. Summary of Changes in the Final Permit

The changes from the Draft Permit to the Final Permit are summarized immediately below and are explained in the responses to the comments that follow:

1. Part I.A.1 The "Estimate" sample type for effluent flow at Outfall 001 was eliminated and sample type "Meter" is required in the Final Permit. See Responses to Comments III.2.4, IV.1, and VI.6.
2. Part I.A.1. The Effluent Total Phosphorus limit at Outfall 001 was change from 25 µg/L to 12 µg/L which applies year-round. The Final Permit eliminates the seasonal limits from October to May and June to September. See Responses to Comments III.2.0, III.2.1, and VI.2.
3. Part I.A.1. The Interim Total Phosphorus reporting requirement at Outfall 001 was eliminated. See #13 (compliance schedule), below. Footnote 6 (p. 9) has been revised to eliminate the option to measure flow by weir calculation or direct measurement in lieu of a flow meter and totalizer. See Reponses to Comments III.7, III.3, and VI.5.
4. Part I.A.1 The parameter "Fish Conversion Ratio" was changed to "Fish Feed Efficiency" due to an administrative limitation with NetDMR. A footnote (13) was added to define Fish Feed Efficiency and explain how it must be calculated. See Response to Comment VI.4.
5. Part I.A.2 The "Estimate" sample type for effluent flow at Outfall 002 was eliminated and sample type "Meter" is required in the Final Permit. See Responses to Comments III.2.4, IV.1, and VI.6.
6. Part I.A.2. The Effluent Total Phosphorus limit at Outfall 002 was change from 25 µg/L to 12 µg/L which applies year-round. The Final Permit eliminates the seasonal limits from October to May and June to September. See Responses to Comments III.2.0, III.2.1, and VI.2.
7. Part I.A.2. The Interim Total Phosphorus reporting requirement at Outfall 002 was eliminated. See #13 (compliance schedule), below. See Reponses to Comments III.7, III.3, and VI.5.
8. Part I.A.2 The parameter "Fish Conversion Ratio" was changed to "Fish Feed Efficiency" due to an administrative limitation with NetDMR. A footnote (13) was added to define Fish Feed Efficiency and explain how it must be calculated. See Response to Comment VI.4.
9. Part I.A.3. The Annual Total Phosphorus Load was revised to Total Phosphorus Load. The Annual Limit was reduced from 395 pounds per year to 227 pounds per year. The requirement to report the average monthly load was revised to include a limit of 19 pounds per month. The measurement frequency was changed from once per month to once per week to match the measurement frequency for the concentration-based total phosphorus limits. Footnote 10 (p. 9) has been updated to reflect the revised annual total phosphorus load limit. See Responses to Comments III.2.0, III.2.1, VI.2, and VI.6.
10. Part I.A.3. The Final Permit eliminates the Seasonal Total Phosphorus Load limit and establishes a single, year-round limit. See Responses to Comments III.2.0, III.2.1, and VI.2.
11. Part I.A.3. The Final Permit establishes a reporting requirement for Ambient Total Nitrogen. Footnote 12 (p. 9) has been updated to include ambient total nitrogen. See Responses to Comments III.2.2 and VI.4.

12. Part I.C.2.a.1.i. The requirement to continue the use of low phosphorus feed has been revised to require the Permittee to use the lowest possible phosphorus feed practicable for each size and life stage of fish. See Response to Comment IV.1.
13. Part I.C.2.a.1.iii. The management practice related to the removal of solids from rearing units and/or settling tanks has been revised to include any treatment technology. See Response to Comment VI.1.
14. Part I.C.3.a. The conditions related to the benchmark requirements for total suspended solids has been revised to require the Permittee to report compliance with the maximum daily TSS benchmark within 30 calendar days following the date of exceedance. See Reponses to Comments III.2.3 and VI.4.
15. Part I.C.6. The draft schedule for achieving compliance with the numeric total phosphorus limits has been removed from the Final Permit. See Response to Comment III.7.
16. Part I.C.5. A Nitrogen Optimization Strategy has been added to the Final Permit. See Responses to Comments III.2.2 and VI.4.
17. The Final Permit Part I was re-numbered as certain permit conditions were added or removed.

II. List of Commenters

Oral Comments at Public Hearing

Representative Mike Harrington
David W Swenson
Dr. Fred Quimby
Tom Irwin (Conservation Law Foundation)
Bill Meyer
Penny Meyer
David A. Bickford
Reuben Wentworth
Paul Raslavicius
Gene Young
Patricia Tarpey
Michael Gelinas
Russ Vaiden

Written Comments

Conservation Law Foundation
Dr. Wane Schneiter
New Hampshire Fish and Game Department
Dr. Fred Quimby
Representative Mike Harrington
New Durham Board of Selectmen
Alton Board of Selectmen
Alton Conservation Commission
Patricia Tarpey (Lake Winnipesaukee Association)
Jillian Eldridge (Moose Mountains Regional Greenways)
Michael Gelinas
Arthur Butt
Russell Vaiden
Paul Raslavicius
Bill Meyer

In addition, EPA received a form letter prepared by Conservation Law Foundation from 155 individuals. EPA presents responses to the written comments first, followed by responses to the oral comments provided at the public hearing.

III. Comments from Conservation Law Foundation

Conservation Law Foundation ("CLF") appreciates the opportunity to comment on the above-referenced Draft National Pollutant Discharge Elimination System ("NPDES") permit for the Powder Mill State Fish Hatchery (hereinafter "PMSFH" or "Facility"). CLF is a non-profit environmental advocacy organization working to protect New England's environment for the benefit of all people. Working in New Hampshire and states across the region, we seek solutions to protect our natural resources, build healthy communities, and sustain a vibrant economy. For years, CLF has engaged in advocacy under the Clean Water Act to ensure our waters benefit from the full protection of the law.

As set forth in greater detail below, CLF is greatly concerned about the PMSFH's significant adverse impacts on Marsh Pond and other segments of the Merrymeeting River, as well as its threats farther downstream to the health of New Hampshire's iconic Lake Winnipesaukee. Our concerns, of course, are shared by the local communities, as evidenced by public comments on behalf of the Alton and New Durham Select Boards; by local property owners, residents, and users of Merrymeeting River who have borne witness to the remarkable degradation of the Merrymeeting River caused by the PMSFH; and by the Lake Winnipesaukee Association. CLF greatly appreciates the commitment, work, and dedication of local citizens – including the Alton and New Durham Select Boards, the Alton/New Durham Cyanobacteria Mitigation Steering Committee, the New Durham Water Quality Committee, and numerous citizen-scientist volunteers – leading to the development of the Merrymeeting River & Lake Lake Loading Response Model Report (March 2019) and Merrymeeting River & Lake Watershed Management Plan (September 2019) ("Watershed Management Plan" or "WMP")[1] as well as to local actions to address non-point source pollution affecting the Merrymeeting River.

[1] Presumably the Watershed Management Plan is already contained in EPA's administrative record. The WMP is can be accessed at https://www.alton.nh.gov/forms/conservation/MM_FINAL_WMP_092019.pdf (last visited Feb. 14, 2020).

EPA Response:

The comment expresses Conservation Law Foundation's (CLF's) concerns about the impacts from the discharges at New Hampshire Fish and Game's Powder Mill State Fish Hatchery (PMSFH) on the aquatic community and water quality in the Merrymeeting River and three downstream impoundments: Marsh Pond, Jones Pond, and Downing Pond. The comment does not require a response. The NPDES permit has captured widespread interest of local residents, committees, and watershed groups, which is evident in the effort local residents, committees, and watershed groups dedicated to water quality monitoring and the development of the 2019 Merrymeeting River & Lake Watershed Management Plan ("WMP") (AR-81) and by the numerous comments received on the Draft Permit. EPA addresses the extensive comments submitted by CLF and others in detail in responses to comments below.

1. Overview: The Merrymeeting River in its Hydrologic Context and The Outsized Role of the Powder Mill State Fish Hatchery in Causing Its Degradation

The Merrymeeting River – including Marsh, Jones, and Downing Ponds – provides an important connection between the River's headwaters to the north – Merrymeeting Lake – and the

waterbody into which it flows, Lake Winnipesaukee's Alton Bay. The severe impacts of the Powder Mill State Fish Hatchery are best understood in this context.

1.1 Hydrologic Context

Merrymeeting Lake, serving as the headwaters to the Merrymeeting River, is one of the cleanest waterbodies in the state of New Hampshire. It is oligotrophic, with low nutrient concentrations, "excellent dissolved oxygen levels in the bottom waters," and visibility over 28 feet. WMP at 17. Located immediately downstream of Merrymeeting Lake's outlet, the PMSFH – the state's largest fish hatchery – "discharges a near-constant water load containing phosphorus levels approximately 12 times higher than the outflow concentration from Merrymeeting Lake." *Id.* at 33. At times during the summer, the Facility's discharge is the *only* headwater source for the Merrymeeting River, meaning that *all* outflow from Merrymeeting Lake runs through the PMSFH. *Id. See also* Report of J.E. Jack Rensel M.Sc., Ph.D. ("Rensel Report"), appended as Attachment ("Attach.") 1, at 7 ("Average annual river flow is about 6 cubic feet per second (CFS) *but during summers with normal weather (when the upper river is in fact just a small creek), all of the river's flow, near 1 cubic foot per second, flows through the hatchery.*") (emphasis in original).

Immediately downstream of the PMSFH, the Merrymeeting River flows into Marsh Pond, Jones Pond, and then Downing Pond, continuing from there ultimately into Lake Winnipesaukee's Alton Bay. The Merrymeeting River provides tremendous recreational, scenic and rural value to area residents and visitors alike. Lake Winnipesaukee, the health of which is directly related to the health of the Merrymeeting River,[2] is both a remarkable natural resource and a critically important economic asset to the Lakes Region and, indeed, the state as a whole.

[2] "A USEPA survey completed in 1974 showed that the Merrymeeting River was the second largest phosphorus and water load among 27 major tributaries to Lake Winnipesaukee." WMP at 1, n. 1.

EPA Response:

The comment generally summarizes the hydrology of the Merrymeeting River watershed from Merrymeeting Lake to Alton Bay in Lake Winnipesaukee. The comment offers no recommendations or request for changes to the Draft Permit. As the comment points out, the PMSFH discharges at an average total phosphorus (TP) concentration of about 50 µg/L (at Outfall 002) to 70 µg/L (at Outfall 001), based on data reported through May 2020, which is consistent with the estimate of "phosphorus levels approximately 12 times higher than the outflow concentration from Merrymeeting Lake" cited in the comment. AR-11 p. 33. EPA also agrees that, at times, all of the inflow to the Merrymeeting River flows through the hatchery. *See* 2019 Fact Sheet pp. 15, 25.

1.2 The PMSFH's Major Impact on Water Resources

Located immediately downstream of Merrymeeting Lake and discharging into the Merrymeeting River immediately above Marsh Pond, the PMSFH is causing sharp declines in water quality in downstream resources. As the WMP explains:

> Total phosphorus in the epilimnion of Merrymeeting Lake has ranged from 2.3 to 9.0 ppb, with an all monthly data median of 3.5 ppb (i.e., the Existing Median Water Quality applied to the assimilative capacity analysis; Table 3-5). Merrymeeting Lake has low (excellent) phosphorus compared to average levels in New Hampshire lakes. The ponds exhibit significantly worse water quality; total phosphorus in the epilimnion of Marsh, Jones, and Downing Ponds has ranged from 31-65 ppb, 22-36 ppb, and 19-34 ppb, with an all monthly data median of 43 ppb, 27, ppb, and 25 ppb, respectively (Table 3-5).
>
> Chlorophyll-a in Merrymeeting Lake has ranged from 0.1 to 1.6 ppb, with an all monthly data median of 0.8 ppb (i.e., the Existing Median Water Quality applied to the assimilative capacity analysis; Table 3-5). Merrymeeting Lake has low (excellent) chlorophyll-a compared to average levels in New Hampshire lakes. The ponds exhibited significantly worse water quality; chlorophyll-a in Marsh, Jones, and Downing Ponds has ranged from 4-31 ppb, 6-17 ppb, and 4-9 ppb, with an all monthly data median of 8 ppb, 8 ppb, and 6 ppb, respectively (Table 3-5).

WMP at 18.

The numbers described above tell a powerful and unfortunate story that has been playing out for too long: the PMSFH is taking in water from Merrymeeting Lake found to be "excellent" in terms of phosphorus and chlorophyll-a, severely polluting that water as a result of its operations, discharging that polluted water into Marsh Pond, and causing Marsh, Jones, and Downing Ponds to have "significantly worse" water quality." WMP at 18. The outsized role of the PMSFH is beyond debate: "Waterbodies downstream of Merrymeeting Lake were dominated (28-67%) by the upstream point source load from the Powder Mill State Fish Hatchery that discharges to the river below the outlet to Merrymeeting Lake." WMP at 28. *See also id.*, Fig. 3-6 (illustrating the dominating impact of PMSFH's total phosphorus load extending from the Facility downstream through Downing Pond, and with major impact continuing to Merrymeeting confluence with Alton Bay). *See also* Rensel Report (Attach. 1) at 3 ("[T]he hatchery remains the largest single point source of phosphorus in the entire river and pond system. . . .").

EPA Response:

The comment summarizes total phosphorus (TP) and chlorophyll-a (chl-a) data for the Merrymeeting Lake and downstream waterbodies as presented in the 2019 Watershed Management Plan (AR-81). The comment offers no recommendations or request for changes to the Draft Permit.

According to the comment and the WMP, the data indicates that Merrymeeting Lake has excellent water quality and asserts that the discharges from PMSFH results in "significantly worse" water quality in the downstream waterbodies. Both the LLRM data and the WMP values illustrate that the lake has much lower TP concentrations than the downstream waterbodies. As explained in the 2019 Fact Sheet (p. 25):

> The cold, high-quality source water from the Merrymeeting Lake is low in TP (0.006 mg/L or less) and the effluent discharged from the hatchery outfalls is, on

> average, about 0.05 mg/L (Appendix A), which is a substantial increase from the intake concentration. In addition, the flow from Merrymeeting Lake forms the headwaters of the Merrymeeting River. Much of this flow is routed through the hatchery (with the exception of spring and fall lake drawdown) and during summer all of the flow to the Merrymeeting River is from the hatchery. See 2019 Merrymeeting River & Lake Watershed Plan Figure 3-8 (at 33). The hatchery is the largest contributor of phosphorus to the system, which is experiencing severe water quality impairments related to excessive phosphorus loading. For these reasons, EPA has determined that the addition of phosphorus from the hatchery to the impaired waterbody has the reasonable potential to cause or contribute to an in-stream excursion above the narrative criteria discussed above. *See* 40 C.F.R. § 122.44(d)(1)(ii).

Consistent with the comment, the 2019 Fact Sheet indicates that the source water for the hatchery is much lower in TP, that the downstream bodies are experiencing severe water quality impairments related to nutrient loading, and that the hatchery is causing or contributing to these impairments.

2. The Draft NPDES Permit Fails to Establish Water Quality-Based Effluent Limitations That Will Ensure Attainment of State Water Quality Standards

As EPA states in the Draft Permit fact sheet: "A NPDES permit must include any water quality-based limitations necessary to ensure compliance with water quality standards of the state, including narrative criteria, where the pollutant discharge is to occur." Fact Sheet, App. D at 1 (citing 33 U.S.C. §§ 1311(a), 1342; 40 CFR §§ 122.4(d), 122.44(d)(1)(i), 122.44(d)(1)(vi). Marsh Pond, Jones Pond, and Downing Pond are all designated as failing to support primary recreation uses (i.e., they are impaired, or failing to meet state water quality standards) as a result of the presence of cyanobacteria. *See* State of New Hampshire 2018 303(d) List, Appendix A.1.[3] Toxic cyanobacteria blooms in these water bodies not only have resulted in warnings against primary contact recreation uses, but they also pose a health threat to people and animals: exposure to toxic cyanobacteria blooms can result in a host of health risks to people, pets and wildlife ranging from gastrointestinal illness to skin irritation to death,[4] and multiple studies examining the effect on animals of exposure to the neurotoxin beta-methyl-amino-l-alanine (BMAA) produced by cyanobacteria have also indicated a potential link between cyanobacteria and neurodegenerative diseases like ALS.[5] The "[p]resence of cyanobacteria is an indicator of eutrophication, but excessive nutrients are likely to be the primary cause." Fact Sheet (Appendix D) at 66.

In addition to impairing designated primary contact recreation uses as a result of nutrient-fueled cyanobacteria blooms, Marsh Pond and other downstream waters are violating numerous narrative water quality standards. In particular:

- Marsh, Jones, and Downing Ponds are violating the state's water quality standards related to nutrients, which provide in pertinent part that such waters "shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Rule Env-Wq 1703.14 (b). As the WMP states: "Results of

the assimilative capacity analysis for Marsh, Jones, and Downing Ponds showed that the ponds are impaired for both total phosphorus and chlorophyll-a assessments and have greatly exceeded their capacity to assimilate additional nutrients, and thus reflect degraded water quality (Table 3-8)." WMP at 26. *See also* Rensel Report (Attach. 1) at 9 ("[C]yanobacteria are notoriously associated with situations where there is excess P loading."). The Facility discharges significant loads of total suspended solids, resulting in ongoing internal loading (re-release) of phosphorus. *Id.* at 12.

- Marsh and Jones Pond are violating the state's water quality standards pertaining to benthic deposits, which provide that such waters "shall contain no benthic deposits that have a detrimental impact on the benthic community, unless naturally occurring." Rule Env-Wq 1703.08. As reported in the public hearing comments of Messrs. Fred Quimby and Michael Gelinas, and in the Rensel Report (Attach. 1 at 12), the PMSHF has discharged massive sediment loads, causing the accumulation of significant benthic deposits, dramatically altering the natural character of Marsh and Jones Pond, and resulting in significant internal loading of phosphorus.[6]

- Marsh Pond, Jones Pond, and Downing Pond are violating the state's water quality standards pertaining to biological and aquatic community integrity, which provide that "[a]ll surface waters shall support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region," and that "[d]ifferences from naturally-occurring conditions shall be limited to non-detrimental differences in community structure and function." Rule Env-Wq 1703.19. As the WMP states, "[e]xceedances of the chlorophyll-a criterion suggest that the algal community is out of balance," WMP at 16, and residents who know and use the Merrymeeting River have reported the significant presence of filamentous green algae and non-native aquatic plants. Eutrophication results in "'weed species' of plants, algae, invertebrates and fish . . . adapted to compromised conditions" and the loss of biodiversity. Rensel Report (Attach. 1) at 12. *See also* NHDES's 2018 "Status of Each Assessment Unit," identifying Jones Dam Pond as impaired for non-native invasive plants.[7]

- Marsh Pond, Jones Pond, and Downing Pond are violating the state's water quality standards pertaining to color; turbidity; and slicks, odors, and surface floating solids. Rules Env-Wq 1703.10, 1703.11, 1703.12. Surveys of these waterbodies "reported that the ponds were experiencing reduced clarity, elevated nutrients, abundant plant and algae growth, and low dissolved oxygen in bottom waters. . . ." WMP at 17.

- Marsh Pond and Jones Pond are violating the state's water quality standards pertaining to dissolved oxygen, Rule Env-Wq 1703.07, as they experience low oxygen conditions in their bottom layers, which in turn contribute to internal phosphorus loading from sediments. *See id;* Rensel Report at 12.

The PMSFH is causing or contributing to each of the above-described water quality standards violations and is causing or contributing to pollutant loads further downstream, in Lake Winnipesaukee's Alton Bay, that threaten the health of that water body. In addition, the PMSFH

is violating the state's antidegradation requirements, Part Env-Wq 1708, which requires maintenance and protection of water quality to protect existing uses. As discussed below, the Draft Permit's proposed effluent limitations fail to correct these significant violations and, as required by law, to ensure compliance with state water quality standards.

[3]Available at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/index.htm (last visited Feb. 14, 2020).
[4] *See* MMRL WMP at 22 ("Cyanobacteria blooms can (but not always) produce microcystins and other toxins that pose a serious health risk to humans, pets, livestock, and wildlife, such as neurological, liver, kidney, and reproductive organ damage, gastrointestinal pain or illness, vomiting, eye, ear, and skin irritation, mouth blistering, tumor growth, seizure, or death."). *See also* Rensel Report (Attach. 1) at 10-11.
[5]*See e.g.,* Sandra Anne Banack *et al.*, "Detection of Cyanotoxins, B-N-methlyamino-L-alanine and Microcystins, from a Lake Surrounded by Cases of Amyotrophic Lateral Sclerosis," *Toxins* 2015, 7, 322-336 (provided as Attach. 2); Paul Alan Cox *et al.,* "Dietary exposure to an environmental toxin triggers neurofibrillary tangles and amyloid deposits in the brain," *Proc. R. Soc. B* 283 (provided as Attach. 3); Megan Brooke-Jones et al., Cyanobacterial Neurotoxin Beta-Methyl-Amino-l-Alanine Affects Dopaminergic Neurons in Optic Ganglia and Brain of *Daphnia magna*. 10 TOXINS 12, 527 (2018), *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6315693/ (last visited Feb. 14, 2020); David A. Davis et al., Cyanobacterial neurotoxin BMAA and brain pathology in stranded dolphins. 14 PLOS ONE 3, e0213346 (2019), *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6426197/ (last visited Feb. 14, 2020).
[6] Mr. Gelinas testified at the public hearing that whereas Marsh Pond once had a visible gravel bottom, it now has places with accumulations of two to three feet of sediments. Mr. Quimby testified to the challenges divers have encountered as a result of accumulating sediments in their efforts to remove invasive aquatic species.
[7]Available at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/documents/2018-status-of-each-assessment-unit.xlsx (last visited Feb. 14, 2020

EPA Response:

The 2019 Fact Sheet (p. 6) explains that NPDES permits may establish water quality-based effluent limits when "necessary to ensure that the receiving water meets narrative water quality criteria." *See also* 33 U.S.C. §§ 1311(a), 1342; 40 CFR §§ 122.4(d), 122.44(d)(1)(i), 122.44(d)(1)(vi). Where technology-based effluent limitations alone will not achieve the applicable water quality standards, the CWA and its implementing regulations require development of water quality-based effluent limitations. *See* CWA § 301(b)(1)(C), 40 CFR § 122.44(d)(1). New Hampshire has established water quality standards, including designation of uses and numeric and narrative water quality criteria. The Merrymeeting River is designated as a Class B waterbody meaning that it is designated for protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters. *See* Env-Wq 1703.01(c) and RSA Section 485-A:8(II). The comment raises concerns that the discharge from PMSFH is currently contributing to violations of numerous water quality standards and that the Draft Permit fails to ensure compliance with state water quality standards as required by law.

CLF comments that the impoundments downstream of the PMSFH, Marsh Pond, Jones Pond, and Downing Pond, are not attaining state water quality standards for:

- Nutrients (Env-Wq 1703.14(b));
- Benthic deposits (Env-Wq 1703.08);
- Biological and aquatic community integrity (Env-Wq 1703.19);
- Color (Env-Wq 1703.10);
- Turbidity (Env-Wq 1703.11); and

- Slicks, odors, and surface floating solids (Env-Wq 1703.12).

The Clean Water Act requires each state to submit two surface water quality documents to the EPA every two years: 1) a report describing the quality of its surface waters and an analysis of the extent to which all such waters provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water ("305(b) Report"); and 2) a list of surface waters that are impaired or threatened by a pollutant or pollutants, are not expected to meet water quality standards within a reasonable time even after application of best available technology standards for point sources or best management practices for nonpoint sources, and/or which require development and implementation of a comprehensive water quality study designed to meet standards ("303(d) List"). New Hampshire Department of Environmental Services (NHDES) is tasked with evaluating surface water quality and preparing an assessment of surface waters which it consolidates into a single, integrated report. The 2018 303(d) List[1] and Consolidated Assessment and Listing Methodology (CALM) (AR-80) were approved by EPA on February 25, 2020. A summary of the 2018 Assessment for the waterbodies downstream of the hatchery is provided in Table III-1. *See also* 2019 Fact Sheet p. 15, AR-82.

Table III-1. Support for designated uses in Marsh Pond and two downstream waterbodies as summarized in the 2018 Alton Bay Watershed Report Card. *See* AR-82.

Designated Use	**Marsh Pond**	**Jones Dam Pond**	**Downing Pond**
Aquatic Life	Not Assessed	Not Supporting	Not Assessed
Drinking Water After Adequate Treatment	Fully Supporting	Fully Supporting	Fully Supporting
Primary Contact Recreation	Not Supporting	Not Supporting	Not Supporting
Secondary Contact Recreation	Not Assessed	Not Assessed	Not Assessed
Fish Consumption	Not Supporting	Not Supporting	Not Supporting

The source of impairment of the fish consumption designated use is consistent with the statewide fish consumption advisory for freshwater fish due to mercury. According to NHDES's most recent assessment and 303(d) list, the source of impairment of the primary contact recreation designated use in Marsh, Jones Dam, and Downing Ponds is cyanobacteria hepatotoxic microcystins. *See* AR-82. As the commenter correctly notes, hepatotoxic cyanobacteria microcystins are potentially harmful to humans, pets, and wildlife that come into contact with the toxins either through physical contact, inhalation, or ingestion. In addition, aquatic life integrity is impaired in Jones Dam Pond due to a non-pollutant (non-native aquatic plants). *See id.* According to the 2018 Marsh Pond Watershed Summary, the aquatic life integrity and primary contact recreation designated uses are potentially supported based on limited chlorophyll-a and turbidity data, and the aquatic life integrity designated use is potentially not supported due to limited total phosphorus data. *See id*.

[1] NHDES's 2018 303(d) List and associated documentation is available at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/index.htm.

The 2019 Fact Sheet (p. 5) explains that the CWA and federal regulations require that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet applicable state or federal water quality standards, such as when less stringent technology-based effluent limits would interfere with the attainment or maintenance of water quality criteria in the receiving water. See CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1), 122.44(d)(5), 125.84(e), and 125.94(i). For the Draft Permit, EPA considered whether the discharge of pollutants, including total suspended solids, biochemical oxygen demand, and nutrients has a reasonable potential to cause or contribute to an excursion of water quality standards in the receiving water. EPA determined that the discharge of total phosphorus from PMSFH has a reasonable potential to cause or contribute to the impairment of the primary contact recreational use of Marsh Pond and the downstream waterbodies *and* that the non-numeric, technology-based limits from the effluent limitations guidelines (ELGs) for this industry (40 CFR Part 423) are not sufficiently controlling phosphorus to meet water quality standards in the receiving water, including the narrative, general water quality criteria at Env-Wq 1703.03(c)(1) and the narrative standards for nutrients at Env-Wq 1703.14(b). *See* 2019 Fact Sheet p. 25. The Draft Permit established a water quality-based effluent limitation for total phosphorus (TP) to address the excursion of water quality criteria and protect the designated use. NHDES has not identified any additional impairments in Marsh Pond or the downstream waters associated with benthic deposits, color, turbidity, slicks, odors, floating solids, or biological and community integrity. For the Final Permit, EPA has re-evaluated the effluent considering the water quality standards raised in the comment in responses to additional comments below. *See* Responses to Comments III.2.2, III.2.3, and VI.4.

CLF comments that PMSFH is violating the state's antidegradation requirements at Env-Wq 1708, which requires maintenance and protection of water quality to protect existing uses. The 2019 Fact Sheet (p. 6) explains that New Hampshire's Antidegradation Policy applies to any new or increased activity that would lower quality or affect existing or designated uses, including increased loadings to a water body from an existing activity. The purpose of antidegradation, according to NHDES, is to protect and maintain the quality of the state surface waters including their existing and designated uses by establishing a process for review and justification of proposed activities that would increase pollutant loads, degrade the quality, or otherwise adversely affect the uses of a waterbody. *See* AR-83. Antidegradation applies to 1) any proposed new or increased point source or nonpoint source discharge of pollutants that would lower water quality or affect the existing or designated uses; 2) any proposed increase in pollutant loadings to waterbody when the proposal is associated with existing uses; 3) any increase in flow alteration over an existing alteration; 4) any hydrologic modifications, such as dam construction and water withdrawals. *See* Env-Wq 1708.02. PMSFH has not proposed any new or increased discharge that would lower water quality or affect existing or designated uses, an increase in flow alteration, or any hydrologic modifications. Therefore, the antidegradation policy does not apply in the context of establishing effluent limitations in this NPDES permit reissuance. To the extent the existing discharge causes or contributes to a violation of water quality standards, the proper mechanism to address it is a water quality-based effluent limitation pursuant to Sections 301 and 402 of the CWA.

Beyond antidegradation, New Hampshire water quality standards require that surface water shall be restored to meet the water quality criteria for their designated classification including existing

and designated uses, and to maintain the chemical, physical, and biological integrity of the surface waters. Env-Wq 1703.01(b). As explained above, EPA determined that the discharge of total phosphorus from PMSFH is causing or contributing to the impairment of the primary contact recreational use in downstream waterbodies. The Draft Permit established a water quality-based effluent limitation for total phosphorus to meet water quality criteria protective of this designated use. *See* 2019 Fact Sheet p. 25. In responding to comments about the Draft Permit, EPA has reconsidered whether the proposed effluent limitation for total phosphorus is sufficiently protective of designated uses and whether additional, water quality-based effluent limitations are necessary to meet applicable state or federal water quality criteria. For a detailed discussion of the total phosphorus limits in the Final Permit see Reponses to Comments III.2.1 and VI.2.

Based on the available technical information and data, EPA does not have a basis for concluding that the discharge from PMFSH is causing or contributing to a violation of the additional criteria identified by CLF, i.e., Nutrients (Env-Wq 1703.14(b)); Benthic deposits (Env-Wq 1703.08); Biological and aquatic community integrity (Env-Wq 1703.19); Color (Env-Wq 1703.10); Turbidity (Env-Wq 1703.11); and Slicks, odors, and surface floating solids. Nor has CLF provided compelling evidence of such violations. *See* Responses to Comments III.2.2, III.2.3, IV.4.

2.1 The Draft Permit's effluent limitations for Total Phosphorus are inadequate and must be amended to ensure attainment of state water quality standards

In addition to the general requirement that NPDES permits contain effluent limitations that ensure the attainment of state water quality standards, New Hampshire's standards with respect to nutrients specifically provide that "[e]xisting discharges containing phosphorus . . . which encourage cultural eutrophication shall be treated to remove the nutrient . . . to ensure attainment and maintenance of water quality standards." Rule Env-Wq 1703.14 (c). The PMSFH is and has been violating this standard, and the Draft Permit's effluent limitations for total phosphorus are inadequate to ensure this and related standards are attained.

EPA Response

The comment states the PMFH is violating the narrative water quality standard for nutrients and argues that the Draft Permit's effluent limitations for total phosphorus (TP) are inadequate to ensure this and related standards are attained. The basis for this argument is provided in the more detailed comments below. As explained in the responses below, as well as in Response to Comment VI.2, EPA has reviewed the proposed TP effluent limits and the Final Permit establishes more stringent TP limitations.

2.1.1. The Draft Permit should be revised to manage Marsh, Jones, and Downing Ponds as oligotrophic waterbodies

As discussed above, Merrymeeting Lake is oligotrophic, and with the exception of the PMSFH, there is no significant source of pollution influencing the water quality of Marsh Pond. Accordingly, it can and should be assumed that, but for the significant influence of the

PMSFH, Marsh Pond, Jones Pond, and Downing Pond would be oligotrophic.[8] Indeed, according to the Watershed Management Plan: "The phosphorus load for pre-development conditions for the Marsh, Jones, and Downing Ponds were estimated at 80 kg/yr, 86 kg/yr, and 96 kg/yr (82-84% less than current conditions), with in-pond phosphorus concentrations of 2.6 ppb, 2.7 ppb, and 2.8 ppb, respectively." WMP at 29. Total Phosphorus concentrations at these levels would place each of the ponds clearly in the category of oligotrophic waterbodies. WMP at 17, Table 3-3 (categorizing waterbodies with TP concentrations less than 8.0 ppb as oligotrophic). *See also id.* at 26 ("At a minimum, these ponds [i.e., Marsh, Jones, and Downing Ponds,] should exhibit mesotrophic conditions *or better* without the influence of the hatchery." (emphasis added)).

In establishing effluent limitations, EPA must base its analysis and necessary requirements on the trophic class of the receiving water that would exist *absent* the permittee's discharges. Otherwise, allowing a discharger such as the PMSFH to benefit (through less rigorous permit requirements) from having degraded the trophic status of the receiving water body (i.e., Marsh Pond) would fly in the face of the state's antidegradation requirements, which establish clear protections for high quality waters, with limitations on a discharger's impacts thereon, Part Env-Wq 1708, and the goals and intent of the Clean Water Act. Accordingly, EPA should revise its analysis to treat Marsh, Jones, and Downing Ponds as oligotrophic and establish new, much more stringent effluent limitations required to restore the waterbodies to that status. *See* WMP at 26 (discussing phosphorus and chlorophyll-a levels necessary for an oligotrophic waterbody).

EPA Response

The comment suggests that the effluent limitations for phosphorus must be based on the trophic class of the receiving water that would exist absent the discharge from the hatchery, which, as asserted in the 2019 WMP, would be oligotrophic. The comment requests that EPA revise its analysis to treat the downstream waterbodies as oligotrophic and establish new, more stringent effluent limits to restore these waterbodies to this trophic class.

Under the CWA, effluent limitations "shall be established which can reasonably be expected to contribute to the attainment or maintenance of such water quality." CWA Section 302(a). New Hampshire water quality standards require that "all surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters." Env-Wq 1703.01(b). In addition, Env-Wq 1703.14(b) states that Class B waters, such as the receiving waters, "shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designed uses, unless naturally occuring." Consistent with state water quality standards and the CWA, the Final Permit must establish effluent limits designed to achieve in-lake levels of nutrients that will be protective of the designated uses of the receiving water.

As stated in the Fact Sheet, NHDES sets certain water quality targets based on the trophic classification of the system. *See* 2019 Fact Sheet at 71. *See also* AR-80 p. 63-65. This is the basis on which the trophic classification is relevant to the setting of the TP limits. Where multiple trophic class evaluations have been conducted over the years, NHDES directs that the "cleanest" (aka "best") trophic class observed shall be used to set the total phosphorus (TP) and

chlorophyll-a (chl-a) thresholds. *See* AR-80 p. 64. In the LLRM model, setting the TP concentrations at each of the hatchery's two outfalls to "0" (i.e., no TP contribution from hatchery) results in an estimated total watershed load of 134.7 kg/year (297 lbs/year) to Marsh Pond and a predicted in-lake TP concentration of 4-5 µg/L. As the comment points out, the level of TP predicted by the LLRM would classify Marsh Pond as oligotrophic under NHDES's trophic class thresholds. However, NHDES does not assign tropic status of a lake based on a model's predicted level of TP absent a point source. NHDES assesses a lake's overall productivity (i.e., trophic status) with a lake trophic survey that evaluates the physical, biological, and chemical parameters. *See* AR-84. NHDES uses summer bottom dissolved oxygen, Secchi disk transparency, aquatic vascular plant abundance, and chlorophyll-a concentration to calculate a lake's trophic status. *See id*. p. 5.

NHDES's Survey Lake Data Summary classifies Marsh Pond as eutrophic. *See* AR-85. The University of New Hampshire's Lay Lakes Monitoring Program's 2018 Sampling Highlights for Marsh Pond list trophic classifications of mesotrophic for DO and SDT, and eutrophic for TP and chl-a. *See* AR-86. The most recent survey lake summary for Jones Dam Pond classified the lake as mesotrophic based on data collected in 1986. The Lay Lakes Monitoring Program's 2018 Sampling Highlights for Jones Pond list trophic classifications of mesotrophic for SDT and eutrophic for DO, TP, and chl-a. *See* AR-87. The most recent survey lake summary for Downing Pond classified the lake as eutrophic based on data collected in 2003. *See* AR-85. Recent data collected on all three waterbodies by the Merrymeeting Cyanobacteria Steering Committee would likely support a eutrophic classification for all three lakes. Based on the methodology described in the 2018 CALM for assessing water quality standards, the "best" trophic class for the receiving waters downstream of the PMSFH would be mesotrophic. Accordingly, NHDES considers the downstream ponds to be mesotrophic for purposes of identifying a TP target.

The comment maintains that to treat these waterbodies as anything other than oligotrophic (i.e., the trophic class that would existing absent the hatchery's discharges) "would fly in the face of the state's antidegradation requirements, which establish clear protections for high quality waters." As explained in the above comment response, PMSFH has not proposed any new or increased discharge that would lower water quality or affect existing or designated uses, an increase in flow alteration, or any hydrologic modifications. Therefore, the antidegradation policy does not apply in the context of establishing effluent limitations in this NPDES permit reissuance. *See* Env-Wq 1708.02.

Additionally, New Hampshire categorizes waterbodies into one of four categories on a parameter specific basis: impaired waters, tier one waters, tier two waters (High Quality Waters); Outstanding Resource Waters. Jones Dam Pond and Downing Pond are listed in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") as a Category 5 "Waters Requiring a TMDL" for the Primary Contact Recreation designated use. The Primary Contact Recreation designated use is also listed as impaired for Marsh Pond in the Draft 2018 303d List. In all cases, the pollutant requiring a TMDL is cyanobacteria hepatotoxic microcystins. In other words, NHDES has *not* classified these waterbodies as "high quality waters."

EPA has reviewed available data on trophic classification and the standards for protecting designated uses. The thresholds for protecting the primary contact recreation designated use are not dependent on trophic class. This designated use is currently not supported in the downstream waters based on occurrence of cyanobacteria blooms. The thresholds for protection of the aquatic life use are dependent on trophic class. The best available information in accordance with NHDES's method of assessing trophic class indicate that the most appropriate classification for Marsh, Jones, and Downing Ponds is mesotrophic. Accordingly, the effluent limitations in the Final Permit are based on restoring the water quality of Marsh Pond to mesotrophic status. *See* Responses to Comments III.2.1 (below), VI.2.

2.1.2. Even if Marsh, Jones, and Downing Ponds are managed as mesotrophic, the Draft Permit's effluent limitations for Total Phosphorus are inadequate.

The stated goal of the Watershed Management Plan is "to improve water quality in Merrymeeting Lake, Marsh Pond, Jones Pond, Downing Pond, and the Merrymeeting River at Alton Bay to eliminate the presence of toxic cyanobacteria blooms that impair these waterbodies for aquatic life use and primary contact recreation." WMP at 31. To achieve that goal, and based on its characterization of Marsh, Jones, and Downing Ponds as mesotrophic, the WMP establishes the following as a key objective:

Reduce pollutant loading to Marsh, Jones, and Downing Ponds by 307 kg/yr to achieve in-pond median annual and monthly total phosphorus concentrations of 10 ppb.

> Reducing the Powder Mill State Fish Hatchery phosphorus loading by 78% (293 kg/yr) and preventing future phosphorus loading anticipated from new development in the next 10 years (14 kg/yr) can be achieved through hatchery system design upgrades and by implementing [Low Impact Development] regulations on new development and/or implementing stormwater or septic system improvements to reduce pollution from existing development. . . .

WMP at 32. The objective is required not only to meet the WMP's goal as it relates to Marsh, Jones, and Downing Ponds, but also is essential to the WMP's further objective of "reduc[ing] pollutant loading to the Merrymeeting River at Alton Bay by 198 kg/yr to achieve an in-stream median annual and monthly total phosphorus concentration of 10 ppb. *Id.*

Contrary to the goal and objectives of the WMP, the Draft Permit establishes TP effluent limitations consisting of seasonal-based concentration limits of 25 ppb (October – May) and 14 ppb (June – September) based on a monthly average, and TP load limitations of 395 pounds per year, with a seasonal TP load (June – September) of 87 pounds per season. In light of (1) the severely degraded condition of Marsh Pond and downstream waterbodies, (2) the outsized role of the Facility in degrading downstream waterbodies, (3) low flow conditions in the Merrymeeting River during summer months,[9] and (4) significant internal loading of phosphorus already present in Marsh Pond, which will only be exacerbated and perpetuated by continued TP inputs, the Draft Permit's proposed effluent limitations for TP are inadequate and will not ensure attainment of state water quality standards.

Although CLF urges EPA to establish TP effluent limitations to return Marsh, Jones, and Downing Ponds to oligotrophic status, should EPA proceed with managing these waters as mesotrophic, the Draft Permit's TP effluent limitations should be revised by establishing concentration- and load-based TP effluent limitations at the limit of technology. Alternatively, if it would result in the attainment of water quality standards, the Draft Permit should be revised to achieve the WMP's objective of achieving a 78% reduction in TP load from the Facility and in-pond median annual and monthly TP concentrations of 10 ppb (as opposed to EPA's use of 12 ppb as the in-lake target concentration). Such limitations should be year-round, without distinction between the October-to-May and June-to-September timeframes, as achieving more stringent limitations is entirely feasible on a year-round basis, and because higher total phosphorus loads in the October-to-May timeframe will exacerbate internal loading problems during the months of June through September. *See* Comments of R. Wane Schneiter, Ph.D., P.E. (provided as Attachment 4) ("Schneiter Comments") at 3.

[9] "Because of the lack of flow during the critical summer season that is needed for dilution of discharge even after treatment, the wastewater treatment facilities will have to be exceptionally effective in removing algal nutrient and organic wastes. Fast flushing of Marsh Pond sediments in distal (peripheral) areas of the pond is a dubious assumption as fast water flow in such ponds is not distributed homogenously except near the thalweg (primary flow channel)." Rensel Report (Attachment 1) at 6.

EPA Response

The commenter asserts that the Draft Permit's proposed TP effluent limitations are inadequate, will not ensure attainment of state water quality standards, and are contrary to the goal and objectives of the 2019 WMP. The commenter requests that the TP limitation be revised by establishing concentration- and load-based TP effluent limitations at the limit of technology or, if it would result in the attainment of water quality standards, revised to achieve the WMP's objective of achieving a 78% reduction in TP load from the Facility and in-pond median annual and monthly TP concentrations of 10 ppb (as opposed to EPA's use of 12 ppb as the in-lake target concentration) and requests a single, year-round TP limit.

As explained in Response to Comment III.2.0, above, NHDES's most recent assessment and 303(d) list, the source of impairment of the primary contact recreation designated use in Marsh, Jones Dam, and Downing Ponds is cyanobacteria hepatotoxic microcystins and the source of the impairment of aquatic life integrity in Jones Dam Pond is non-native aquatic plants. When a waterbody's designated use is listed as impaired, the CWA requires states to develop a total maximum daily load (TMDL) for the waterbody, which sets the maximum amount of a pollutant that a waterbody can receive and still support designated uses. Certain point sources may be the likely cause of downstream impairments and the allowable pollutant loading needed to meet water quality standards is established in an NPDES permit. Since the targets for meeting water quality standards are known and a schedule will bring the discharger into compliance with the permit as soon as possible, a TMDL is not needed. *See* AR-80 p. 28. Based on the 2019 WMP and MML LLRM, PMSFH is the dominant source of total phosphorus to the Merrymeeting River watershed. The load from the hatchery likely results in excessive phosphorus and there is reasonable potential that the discharge causes or contributes to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. Establishing a

numeric, water quality-based phosphorus limit in the Final Permit and including a schedule to bring the discharger into compliance with this limit as soon as possible is the appropriate path to address the impairment.

The Clean Water Act and federal implementing regulations govern how water quality-based effluent limits are established. CWA Sections 301, 402; 40 CFR § 122.44(d). Limitations for all pollutants or parameters which EPA determines will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including narrative criteria for water quality, were established in the permit in accordance with these requirements. EPA determined that the discharge of total phosphorus from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b). In the absence of a TMDL for the impaired waterbodies, EPA has established a water quality-based limit that it believes will ensure that water quality will be maintained at levels necessary to support the primary contact recreation designated use.

The 2019 Fact Sheet (p. 6) explains that when permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria (e.g., narrative standards for nutrients), the permitting authority must establish effluent limits in one of the following three ways: 1) based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 C.F.R. § 122.44(d)(1)(vi)(A-C). For the Draft Permit, EPA proposed a numeric, water quality-based limit for total phosphorus that EPA determined would attain applicable narrative water quality criteria under Env-Wq 1703.01(b) & (c), 1703.03, and 1703.14(b) *and* which serves as an indicator parameter for cyanobacteria in order to address the impairment of the primary contact designated use. *See* 2019 Fact Sheet pp. 66-67.

CLF comments that the Draft Permit's proposed total phosphorus limits are "contrary to the goal and objectives of the WMP." EPA finds the WMP to be a useful source of data and technical information, however, the goals and objectives contained therein are not binding on the Agency. Consistent with CWA Sections 301 and 402, EPA must, amongst other obligations, ensure that the State of New Hampshire's water quality standards are adequately protected.

The stated goal of the WMP (AR-11 p. 31) is to "improve the water quality in Merrymeeting Lake, Marsh Pond, Jones Pond, Downing Pond, and the Merrymeeting River at Alton Bay to eliminate the presence of toxic cyanobacteria blooms that impair these waterbodies for aquatic life use and primary contact recreation." To achieve this goal, the WMP lists as one of three "key objectives" a reduction in pollutant loading to Marsh, Jones, and Downing Ponds by 307 kg/yr to achieve in-pond median annual and monthly total phosphorus concentrations of 10 ppb, which requires reducing the annual phosphorus load from the hatchery by 78% (293 kg/yr) through hatchery system design upgrades. AR-11 p. 32. However, the WMP provides no explanation as to how these values were calculated nor does it provide any scientific justification to support its conclusion that an in-pond median annual and monthly total

phosphorus concentration of 10 µg/L is necessary to improve water quality and ensure that designated uses will be met.

Neither the WMP nor CLF's comments explain how a numeric limit of 10 µg/L is necessary to satisfy the requirements for establishing water quality-based limits for narrative water quality standards at 40 CFR § 122.44(d). Moreover, CLF states that the Draft Permit limits will not ensure attainment of water quality standard but does not explain or provide any basis supporting this statement. Presumably, CLF believes that the Draft Permit limits are inadequate because they are not identical to the load and in-pond concentrations recommended in the WMP, which are not equivalent to water quality-based effluent limitations established in accordance with the CWA.

CLF then argues that the Draft Permit's TP effluent limitations should be revised by establishing concentration- and load-based TP effluent limitations at the "limit of technology." The comment does not establish what it believes is the "limit of technology" for discharges of total phosphorus from fish hatcheries.

Technology-based effluent limitations (TBELs) represent the minimum level of control that must be imposed in a permit. NPDES permits may impose technology-based limits by 1) applying EPA-promulgated effluent limitation guidelines (ELGs) developed under section 304 of the CWA to discharges by category or subcategory; 2) on a case-by-case basis under section 402(a)(1) of the CWA to the extent that EPA-promulgated effluent limits are inapplicable; 3) through a combination of these two methods where promulgated effluent limits only apply to certain aspects of the discharger's operation or to certain pollutants; or 4) through limitations in terms of toxicity. 40 CFR § 122.44(a)(1), 40 CFR § 125.3(c). The effluent guidelines promulgated by EPA are implemented through NPDES permits as authorized in CWA sections 301(a), 301(b), and 402. Although the regulations do not require the use of any particular treatment technology, they do require facilities to achieve effluent limitations that reflect the proper operation of the model technologies selected as the basis for the effluent guidelines and from which the performance data were obtained to generate the limitations.

EPA has promulgated technology-based ELGs for discharges from concentrated aquatic animal production (CAAP) facilities as defined at 40 CFR § 122.24 and Appendix C of 40 CFR Part 122. 40 CFR Part 451. *See also* 69 Fed. Reg. 51,892 (August 23, 2004) and 2019 Fact Sheet pp. 12, 17-19. In promulgating the ELG, EPA stated that "CAAP facilities can have high concentrations of suspended solids and nutrients, high BOD and low dissolved oxygen levels." 69 Fed. Reg. 51,899. EPA established the use of best management practices (BMPs) as narrative TBELs to control the pollutants identified as being present in CAAP discharges. *See* 69 Fed. Reg. 51,901.

In developing these ELGs, EPA concluded that "the key element in achieving effective pollution control at CAAP facilities is a well-operated program to manage feeding, in addition to good solids management. Feed is the primary source of TSS (and associated pollutants) in CAAP systems, and feed management plans are the principal tool for minimizing accumulation of uneaten feed in CAAP wastewater." 69 Fed. Reg. 51,907. *See also* 2019 Fact Sheet p. 17. EPA established these BMPs as the "best practicable control technology currently available" (BPT),

the "best conventional pollutant control technology" (BCT), and the "best available technology economically achievable" (BAT). 69 Fed. Reg. 51,907-10.

EPA regulations at 40 C.F.R. § 125.3(c) govern the application of TBELs in permits. Specifically, the regulations make clear that "[a]application of EPA-promulgated effluent limitations developed under section 304 of the Act to discharges by category or subcategory" is the default approach where applicable, unless an exception applies. The exception enumerated in the regulations is "[w]here promulgated effluent limitations guidelines only apply to certain aspects of the discharger's operation, or to certain pollutants, other aspects or activities are subject to regulation on a case-by-case basis in order to carry out the provisions of the Act." As explained above, EPA has promulgated ELGs for CAAPs facilities, such as PMFH, under Section 304 of the CWA. In addition, the ELGs address the control of nutrients, see 69 Fed. Reg. 51,899. Accordingly, the exception to the application of ELGs is not applicable. Therefore, the EPA-promulgated ELG applies and EPA is not free to disregard it in favor of commenter's undefined "limit of technology."

Although EPA is not free to impose a more stringent TBEL than required at 40 C.F.R. § 125.3(c), EPA can impose more stringent effluent limitations based on *water-quality* considerations which is the case for this Permit. *See* CWA Sections 301, 402. For discussion regarding the total phosphorus limits contained in the final permit and compliance with water quality standards, see Response to Comment VI.2. It is important to note that, in response to this and similar comments on the Draft Permit, EPA has revised the TP limits. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservation, water quality-based TP limits in the Final Permit, which will result in a 76% reduction in TP loading to Marsh Pond, will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond.

2.2 The Draft Permit's "Report" requirement for Total Nitrogen is inadequate and must be replaced with numeric effluent limitations that will ensure attainment of state water quality standards

In addition to the general requirement that NPDES permits establish effluent limitations that ensure the attainment of state water quality standards, New Hampshire's standards with respect to nutrients specifically provide that (1) "[e]xisting discharges containing . . . nitrogen . . . which encourage cultural eutrophication shall be treated to remove the nutrient . . . to ensure attainment and maintenance of water quality standards" and (2) "[t]here shall be no new or increased discharge containing . . . nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds." Rule Env-Wq 1703.14 (c), (e). *See also id.* 1703.14 (d).

While phosphorus is the primary nutrient limiting algal and plant growth in most freshwater bodies, Rensel Report (Attach. 1) at 2, nitrogen nonetheless plays an important role. As explained by Dr. Rensel, "[e]xcess of N together with P enrichment in warmer freshwaters are often associated with noxious filamentous green algae" (which have proliferated in the

Merrymeeting River with degrading water quality), and both phosphorus *and* nitrogen must be controlled:

> [I]t is important to note that even if one or the other [i.e., phosphorus or nitrogen,] is the limiting nutrient, controlling N and P discharge together is recommended. There are synergisms between the two nutrients with regard to the noxious forms of filamentous green algae that plague some rivers including some that have much lower N and P loading than the Merrymeeting River.

Id. at 8. Among the cyanobacteria found in the Merrymeeting River, "nearly monospecific populations of *Planktothrix isothrix* were detected in the metalimnion of Marsh Pond multiple years in a row." WMP at 22. Importantly, this species of cyanobacteria depends on the availability of nitrogen. As stated in the scientific paper *Deciphering the effects of nitrogen, phosphorus, and temperature on cyanobacterial bloom intensification, diversity, and toxicity in western Lake Erie*:

> In the past decade, the importance of N for CHABs [(cyanobacterial harmful algal blooms)] has been noted due to the increasing dominance of nondiazotrophic genera (Paerl and Fulton 2006; Harke et al. 2016), such as Microcystis and Planktothrix, concurrent with global increases in N loading (Vitousek et al. 1997; Galloway et al. 2004; Glibert et al. 2014). Furthermore, N availability can influence the production and congener composition of the N-rich toxin, microcystin, in Microcystis and Planktothrix, thereby impacting bloom toxicity (Davis et al. 2010; Gobler et al. 2016; Chaffin et al. 2018). This has spurred a growing emphasis on the occurrence of N limitation (Conley et al. 2009; Gobler et al. 2016), as well as N and P colimitation (Elser et al. 2007; Sterner 2008; Davis et al. 2015; Müller and Mitrovic 2015) in CHAB development, although there still remains a debate regarding the most effective and cost efficient mitigation strategies (Paerl and Otten 2016).

See Jennifer Jankowiak *et al*., "Deciphering the effects of nitrogen, phosphorus, and temperature on cyanobacterial bloom intensification, diversity, and toxicity in western Lake Erie," *Limnol. Oceanogr.* Vol. 64, 2019, pp. 1347-1370 (provided as Attach. 5) at 1348.

In light of the foregoing, and to eliminate the Plankothrix species of cyanobacteria in Marsh Pond, it is essential that the Draft Permit be amended to establish numeric effluent limitations for total nitrogen, in terms of both concentration and load, at levels required to ensure attainment of state water quality standards. As with total phosphorus, such limitations should be imposed on a year-round basis, without variation for non-growing season months. Absent such effluent limitations, the Draft Permit fails to comply not only with the general requirement that it ensure attainment of water quality standards but also with the requirements that existing discharges containing nitrogen which encourage cultural eutrophication "shall be treated to remove the nutrient," and that the permit prevent an "increased discharge containing . . . nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication. . . ." Rule Env-Wq 1703.14 (c), (e).

EPA Response

NHDES describes its specific assessment methodology for each of the assessed designated uses in Consolidated Assessment and Listing Methodology (CALM) for its 2018 305(b) and 303(d) Integrated Report. *See* AR-80. For unified nutrient assessment in compliance with the water quality standard for nutrients in lakes (Env-Wq 1703.14), NHDES uses chlorophyll-a as the response indicator and median TP for the nutrient stressor indicator because TP is the liming nutrient in freshwater lakes. *See id*. p. 66. NHDES has no freshwater criteria or thresholds for TN in freshwater. NHDES uses TN as the nutrient stressor indicator pollutant for designated uses in the Great Bay Estuary, but impairment is assessed using a suite of response indicators (e.g., DO, chl-a, water clarity, macroalgae, epiphyte growth, eelgrass cover). *See id*. p. 71. There is no constant, numeric TN threshold that defines a breakpoint between full support and non-support of a designated use. *See id*. p. 75. For waters impaired for cyanobacteria, such as the waterbodies downstream of the PFSFH, the presence of cyanobacteria is indicative of an impairment based on surface scum (Env-Wq 1703.03(c)(1)). Factors considered in the determination include, but are not limited to, the frequency and duration of blooms during the last 10 years, species present, TP concentration, chl-a concentration, DO condition, and season. *See id*. p. 45. Nitrogen concentration is not one of the factors considered in determining impairment for cyanobacteria in freshwaters. In other words, NHDES does not have an assessment threshold for TN impairment in freshwater or a methodology for translating the narrative standards for nitrogen into a numeric effluent limit for freshwater in a NPDES permit.

The comment states that TN must be controlled in the permit because *Planktothrix isothrix*, which have been detected in the metalimnion of Marsh Pond multiple years in a row, is a species of cyanobacteria that depends on the availability of nitrogen. Recent research, particularly in western Lake Erie, observed a relationship between nitrogen and the abundance and toxicity of certain types of non-diazotrophic (i.e., non-nitrogen fixing) cyanobacteria, including *Planktothrix* and *Microcystis*, even as phosphorus concentrations are controlled. *See*, *e.g.*, AR-89. In particular, particulate microcystin concentration (a measure of cyanobacteria toxicity) was significantly higher in years with high nitrate concentrations; there was no apparent relationship between microcystins and soluble reactive phosphorus. *See, e.g.* AR-90 p. 1360. This research suggests that controlling both phosphorus and nitrogen in Lake Erie is paramount to reducing both the severity and toxicity of blooms and, particularly, that nitrogen availability influences the abundance of more toxic strains of cyanobacteria like *Planktothrix*. However, none of the available research suggests any threshold for nitrogen levels that can be used as the basis for translating narrative water quality standards into numeric effluent limitations. In addition, the physical and chemical conditions (e.g., size, depth, volume, flushing rate, nutrient concentrations, temperature, dissolved oxygen) in western Lake Erie where the relationship between nitrogen and certain strains of cyanobacteria are most apparent are not necessarily comparable to conditions the Merrymeeting River and, as a result, it is not clear if the same relationship between nitrogen and cyanobacteria would be present in this system. For example, in Jankowiak et al. (2019) (AR-90), nearshore sites where higher abundance of cyanobacteria and microcystins (a measure of cyanobacteria toxicity) were observed had mean TN concentrations greater than 1 mg/L and TP concentrations greater than 100 µg/L. TN concentrations at the PMSFH from March 2015 through March 2020 were 0.5 mg/L and 0.6 mg/L at Outfalls 001 and 002, respectively. EPA's sampling effort from April through December 2017 measured ambient TN ranging from 0.14 to 0.25 mg/L in Jones Dam Pond and

in the Merrymeeting River at Route 11. Limited NHDES data for Marsh Pond in July through September 2017 observed mean TN at 0.77 mg/L with most epilimnion/surface samples well under 1 mg/L.[2]

Thus, while phosphorus has traditionally been associated with algal blooms in freshwater systems, research provided with the comments and additional studies suggest that both nitrogen and phosphorus can play a role in the occurrence of algal blooms and, particularly, that high nitrogen levels favor more toxic strains of cyanobacteria. However, none of the available research conclusively establishes any threshold for nitrogen levels that can be used as the basis for translating narrative water quality standards into numeric effluent limitations. In addition, the conditions of the studies that have observed a link between nitrogen and certain strains of cyanobacteria are not necessarily comparable to conditions the Merrymeeting River watershed (although there is limited ambient data) and, as a result, it is not clear if the same relationship between nitrogen and cyanobacteria would be present in this system.

While there is not sufficient information to establish a numeric TN limit at this time, in response to concerns about the levels of TN from the hatchery, Part I.A.3 of the Final Permit includes a requirement to measure ambient TN in Marsh Pond (in addition to TP, chl-a, and Secchi disk transparency) and Part I.C.5 of the Final Permit requires the Permittee to implement a nitrogen optimization strategy that optimizes nitrogen removal efficiencies to minimize the annual average mass discharge of TN to the receiving water. As part of the optimization strategy, the Permittee must evaluate the potential reductions in TN that can be achieved by wastewater treatment options designed to meet the TP effluent limitations. Because solids (e.g., feed and feces) are the primary source of nutrients in the effluent, a treatment system to achieve compliance with the TP limits will likely include some level of solids treatment (e.g., a clarifier and settling tank), which may achieve some level of nitrogen reduction. EPA may modify the permit in the future if annual reporting under the nitrogen optimization strategy supports the need for a numeric TN limit.

2.3 The Draft Permit's "Report" requirement for Total Suspended Solids is inadequate and must be replaced with numeric effluent limitations that will ensure attainment of state water quality standards

As local residents have observed, the PMSFH has operated in a manner over the years that has resulted in the significant flushing of sediments out of the Facility into the Merrymeeting River. *See, e.g.,* Feb. 14, 2020 Comments of Fred Quimby. As a result, and as documented in data reported by the PMSFH to EPA, the Facility has discharged massive loads of total suspended solids, causing a significant accumulation of sediments that have formed harmful benthic deposits and contributed to significant internal loading of total phosphorus in violation of state water quality standards. *See e.g.,* WMP at 21. The Draft Permit should be amended to include concentration- and load-based effluent limitations necessary to attain state water quality standards. Absent such modification, the permit will not meet the legal requirement that it ensure attainment of water quality standards.

[2] New Hampshire Department of Environmental Services One Stop Data Mapper. Marsh Pond – Deep Spot Station ID MARALTD. https://www4.des.state.nh.us/gis/emd_results/?id=MARALTD

EPA Response

EPA recognizes that the conditions in Marsh Pond and the downstream impoundments continue to result in the occurrence of cyanobacteria blooms. The 2019 Fact Sheet (e.g., p. 26 and Appendix D) and this Response to Comments (e.g., Response to Comments III.2.1, VI.2) conclude that the discharge of total phosphorus (TP) from the hatchery contributes to proliferation of cyanobacteria in the downstream waterbodies. The water quality-based TP limits in the Final Permit are designed to meet water quality standards at the discharge and improve water quality in the receiving water.

In response to this and other comments received on the Draft Permit, EPA reviewed DMR data and publicly available pollutant loading data and determined that the data used to support this and similar comments likely overestimates the TSS load from the hatchery. *See* Response to Comment VI.4. The Technical Development Document for the CAAP Point Source Category describes the potential water quality impacts resulting from the discharge of TSS. *See* AR-91 p. 6-15. TSS can increase turbidity and reduce the depth to which light can penetrate, which then causes a decline in photosynthetic activity and dissolved oxygen (DO) at depth. DO levels may also decline because TSS absorbs more heat from sunlight and warm water carries less DO than cold water. As sediment settles, it can smother fish eggs and benthic organisms and increase sediment oxygen demand, which also depletes DO. Suspended solids have been observed to impact sensitive fish species when turbidity exceeds 25 NTU. In addition, NH water quality standards for turbidity require that a discharge not cause the receiving water to exceed naturally occurring conditions by more than 10 NTU. Env-Wq 1703.11(b), (d). In response to this and similar comments on the Draft Permit, EPA reviewed turbidity data from Marsh Pond, which indicates that the discharge of TSS from the hatchery is not at levels that would impact light penetration or fish species or that would violate water quality standards related to TSS. *See* Response to Comment VI.4.

Eutrophic systems are commonly characterized by an increase in organic matter resulting from the excess growth of algae. When algae die they settle to the bottom and decompose, which can also depress dissolved oxygen concentrations and lead to hypoxic conditions. *See* 85 Fed. Reg. 31,184 (May 22, 2020). The soft sediment observed in Marsh and Jones Pond may similarly be a result of decaying algae and not from the direct discharge of solids from the PMSFH, especially as turbidity downstream of the outfall is low. The comment does not explain the basis for the conclusion that the TSS discharged from the hatchery is causing an obvious detrimental impact to the benthic community. Under NH water quality standards, benthic deposit is defined as "any sludge, sediment, or other organic or inorganic accumulations on the bottom of the surface water." Env-Wq 1702.06. Class B waters must contain no benthic deposits that have a detrimental impact on the benthic community, unless naturally occuring. Env-Wq 1703.08(b). According to the methodology described in NHDES's 2018 CALM (AR-80 p. 90), excessive deposition of sediments can result in an unhealthy biological community in a constant state of recovery and some benthic deposits can be toxic to aquatic organisms. An impairment of the narrative water quality standards for benthic deposits would be identified by the presence of significant benthic deposits which are causing obvious detrimental impact to the benthic community and are not naturally occurring. The 2018 CALM provides two examples: major sediment deposits resulting from significant

erosion and major iron hydroxide deposits due to increased iron levels in groundwater from landfills or other fill activities. *See id*. There is not sufficient evidence that the discharge of TSS from the hatchery has a reasonable potential to cause or contribute to the narrative water quality standards for solids or benthic deposits in the receiving water that would require establishing a numeric, water quality-based TSS limit.

2.4 The Draft Permit should be amended to reduce effluent flow

The Draft Permit establishes an average monthly effluent flow of 2.0 MGD for Outfall 1 and 4.2 MGD for Outfall 2 and allows sampling to be conducted either by "Meter or Estimate." The permit should require the volume of water flowing through the PMSFH to be reduced to the maximum extent practicable, as reducing flows will result in a smaller volume of water requiring treatment (reducing the size and costs associated with a new treatment plant) and enable greater treatment efficiency. *See* Schneiter Comments (Attach. 4) at 2. Given the importance of accurate flow volumes for purposes of accurately monitoring and reporting pollutant concentrations, the permit should also require sampling to be conducted by meter, *not* by means of estimates.

EPA Response

The comment requests that the effluent flow be reduced to the maximum extent practicable, though does not provide any specific flow limit or a technical basis for identifying a different flow limit.

EPA used the average of the estimated average monthly flow values reported by the Permittee from September 2014 through September 2019 as the average monthly effluent flow limit. Currently, the PMFSH does not have a treatment system in place with design flow limits. The PMSFH will likely have to install wastewater treatment to meet the water quality-based TP limit in the Draft Permit. Minimizing the daily effluent flow through a treatment system will improve efficiency and reduce cost, as the commenter notes. As such, flow will likely be considered during the design of any treatment system that the Permittee ultimately selects to meet the water quality-based TP limit in the Permit. However, at this time there is no basis for setting a flow limit based on a design flow or pump capacity, and it is premature for EPA to establish a flow limit for a treatment system that has not been designed or constructed. EPA may consider establishing a flow limit based on the design of the treatment system during the next permit re-issuance when the operational changes and treatment system will have been implemented.

The Final Permit has been changed to require flow monitoring with a meter or totalizer, rather than an estimate, to ensure that the flow is accurately measured, as the commenter requests. A more accurate measure of the actual flow at the hatchery will enable a more precise estimate of pollutant loads and will assist the Permittee to ensure that the average monthly flow limitations at each outfall are met. Finally, the Permittee must also comply with Part II.B.1 of the Final Permit, which requires the Permittee to properly operate and maintain all facilities and systems of treatment and control which are installed or used by the Permittee to achieve compliance with the conditions of the Permit. Therefore, although the Final Permit does not establish a maximum daily limit on flow, the Permit still requires that all treatment systems be operated within their

flow-design limits and therefore be protective of water quality standards in the receiving water. *See also* Responses to Comment IV.1 and VI.6.

3. The Draft Permit Must Be Amended to Require Immediate Interim Actions that Significantly Reduce Nutrients and TSS Pollution and Ensure Attainment of State Water Quality Standards

The Draft Permit establishes an "Interim Total Phosphorus Requirement" spanning sixty months (the entire term of the permit) and requiring that the PMSFH only *report* (in pounds per year) the load of total phosphorus discharged from its outfalls. This interim reporting requirement and associated delay of numeric effluent limitations is presumably linked to the Draft Permit's compliance schedule requiring the construction and operation of a treatment plant within sixty months of the permit's effective date.

The Draft Permit, as constructed, fails to impose any requirements limiting and reducing (in terms of both concentration and load) discharges of total phosphorus and other pollutants, including total nitrogen and total suspended solids. As such, it fails as a matter of law to ensure the attainment of state water quality standards, including the specific requirement that there be no "increased discharge containing phosphorous or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds in such lakes or ponds." Rule Env-Wq 1703.14 (e). *See also id.* 1703.14 (d).

To ensure the attainment of state water quality standards, the Draft Permit must be amended to impose interim operational requirements – effective immediately upon issuance of the permit and until such time as a new treatment plant is constructed and operational – that significantly reduce pollutant loads, including loads of total phosphorus, total nitrogen, and total suspended solids. Such interim requirements should include, at a minimum:

- **Ceasing fish production, or at least reducing production to a level that will reduce pollutants to the level needed to attain water quality standards.** There is a direct correlation between the number of fish produced at the Facility and its discharges of pollutants. *See* Schneiter Comments (Attach. 4) at 1-2. Accordingly, reducing fish production can serve as an important interim strategy (i.e., until construction and operation of a treatment plant). *Id.* Importantly, EPA should take measures to ensure that any elimination or reduction of fish production is not simply transferred from PMSFH to another facility, unless it can be demonstrated that such other facility has the capacity to increase production without violating state water quality standards.

- **Specifically limit fish feeding practices.** The Facility should be required to use fish feed with the lowest practicable concentration of phosphorus, and to follow a strictly enforced protocol that ensures the most efficient feeding (i.e., to eliminate waste). *Id.* at 2. Although currently part of the BMP Plan for the Facility, the permit should include clear and specific permit terms to ensure the least impact possible from feeding.

- **Substantially increasing the frequency, duration, and effectiveness of cleaning operations.** The Facility can and should be required to significantly improve its cleaning operations, as past practices have caused the discharge of significant volumes of total suspended solids and other pollutants. Such improvements should include, at a minimum, measures that will result in the ongoing *prompt* removal of fish feces and food waste *before* phosphorus dissolves from such materials into the water. *See* R. Wane Schneiter, Ph.D., P.E., Revised Expert Opinion (Attach. 6) at 5 (discussing importance of prompt removal of solids). While we understand that the PMSFH has implemented an interim system for treating cleaning waters, we note that: (1) the Draft Permit fails to require such system to continue in operation, and (2) the interim system is treating a negligible amount of the water flowing through the Facility (less than 1 percent), meaning that, because much of the phosphorus is converted to dissolved form, it is treating little in the way of phosphorus load. *Id.* at 6-7. We also note that the Facility's BMP Plan has been largely ineffective. *Id.* at 4.

It bears emphasis that unlike a Publicly Owned Treatment Works, which cannot shut off or reduce the flow of waste it receives, the PMSFH *can* cease or curtail operations. The Draft Permit's failure to impose significant interim measures to reduce pollutant discharges would only perpetuate the Facility's severe degradation of Marsh Pond and downstream waterbodies in violation of state water quality standards, thus violating the Clean Water Act.

EPA Response

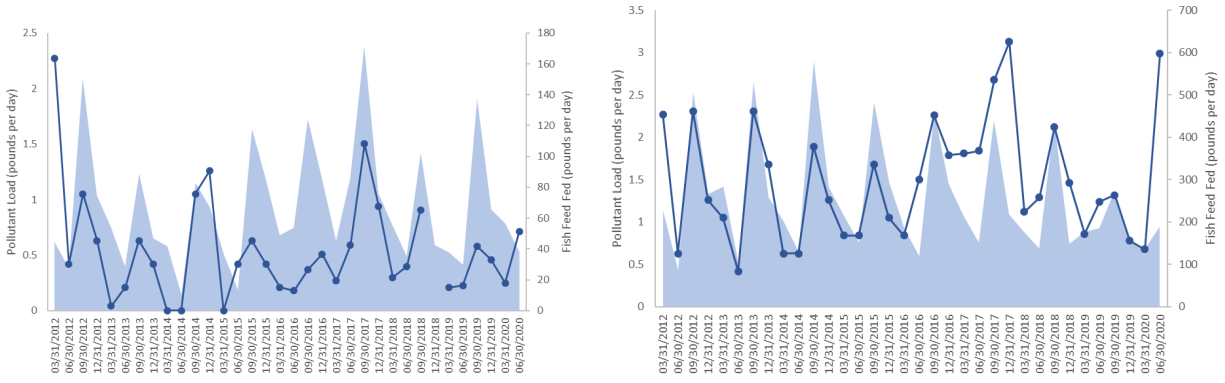
Part I.A.1. and I.A.2 of the Draft Permit requires PMSFH to report the average monthly and maximum daily concentration (in mg/L) and load (in pounds per day) of total phosphorus discharged from each outfall. Part I.A.3 of the Draft Permit requires PMSFH to meet the average monthly and annual total TP load limits (in pounds per day) discharged from the two outfalls combined. The comment requests that the permit impose interim operational requirements to reduce pollutant loads that become effective upon issuance of the permit until such time as a new treatment plant is constructed and operational. The comment recommends three strategies for reducing TP loads in the interim period before any treatment system is constructed: reducing fish production, limiting fish feeding practices, and increasing the frequency, duration, and effectiveness of cleaning operations. *See also* Response to Comment IV.1.

The comment recommends reducing fish production at the hatchery until a treatment system is constructed and operational, but also cautions that transferring fish from PMSFH to another facility must consider the capacity of an alternative facility to increase production without violating state water quality standards. Levels of TP in the effluent are related to the amount of fish feed used, and less fish would require less food and produce less waste, which will result in a reduction in the discharge of TP, as well as TSS and TN. There is currently no information to quantify the reductions of TSS, TP, or TN directly to a reduction in biomass in order to establish an interim numeric limit. However, the PMSFH already shifted the Atlantic salmon production portion away from the hatchery, which has reduced the fish biomass and feed requirements proportional to the amount of fish that were transferred. The comment does not request any specific change to the Draft Permit related to the number of fish at the hatchery. However, in response to this and other comments received on the Draft Permit, EPA has determined that

interim limits requiring incremental reductions in TP until the water quality-based TP limits become effective are warranted. *See* Response to Comment VI.5. EPA has also determined that a schedule for complying with the Final Permit's TP limits is best achieved through an Administrative Order rather than through the compliance schedule proposed in the Draft Permit. See Response to Comments III.7.1 and V. The interim limits will be included in the Administrative Order. In order to meet interim TP limits, the Permittee may elect to reduce the biomass at Powder Mill. However, the Permittee is in the best position to select appropriate measures, including adaption of existing practices such as cleaning and feeding, to meet any interim limits.

The comment recommends that the permit include clear and specific terms to ensure that the Facility uses fish feed with the lowest practicable concentration of phosphorus and follows a strictly enforced protocol that ensures the most efficient feeding (i.e., to eliminate waste). The comment recognizes that the Best Management Practices (BMP) Plan under the 2011 Permit and Draft Permit includes conditions to ensure efficient feeding protocols are followed. See AR-88. The comment does not offer an explanation for why it believes the existing conditions are not "clear and specific terms" nor does the comment itself suggest any specific changes to the BMP requirements other than to suggest that the Permittee follow "a strictly enforced protocol for fish feeding to ensure that it is feeding only as much food as is necessary." The 2011 Permit (Part I.B.4.a.i) and the Draft Permit (Part I.C.3.a.1) require the Permittee to maintain a BMP Plan that addresses efficient feed management and feeding strategies which limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of animal growth in order to minimize potential discharges of uneaten feed and waste products. These BMPs are technology-based requirements from the effluent limitations guidelines (ELGs) for the Concentrated Aquatic Animal Production (CAAP) point source category. 40 CFR § 451.11. EPA has evaluated data reported in the DMR from 2012 through 2020 and confirmed that loads of TSS, TN, and TP tend to increase with the amount of fish feed used. See, for example, the relationship between fish feed fed and TP load in Figure III-1, below.

Figure III-1. Discharges of total phosphorus (in pounds per day) in comparison to reported value of fish food fed during that month (in pounds per day) for Outfalls 001 (left) and 002 (right).



The 2019 BMP Plan explains feeding procedures at the hatchery, including that optimizing feed efficiency is a critical function both to reduce waste and to minimize pollutants. *See* AR-88 p. 4-5. TSS in the effluent is a result of uneaten feed and fish feces and can be used as an indicator to

ensure that BMPs are properly implemented. The Draft Permit establishes a TSS benchmark of 10 mg/L to ensure that the technology-based BMP requirements are effectively controlling solids by limiting the feed input to the minimum amount reasonably necessary. This benchmark is effectively a "clear and specific term" to ensure the BMPs for solids control are effective because an exceedance of a maximum daily TSS concentration of 10 mg/L requires the Permittee to take action to investigate the cause of elevated concentrations and adjust the BMPs as necessary. Part I.C.3.a of the Final Permit has been revised to include a requirement that the Permittee report compliance with the TSS benchmark within 30 days from the initial exceedance.

The 2011 Permit and Draft Permit also require the Permittee to continue use of low phosphorus feed. In July 2019, PMSFH switched to a 0.9% phosphorus feed from a 1.2% feed. *See* AR-92, AR-93, 2019 Fact Sheet p. 18. According to the 2019 Best Management Practices (BMP) Plan (AR-88 p. 5), all fish "of size" (*e.g.*, 6 inches or larger) are fed primarily BioDry® 3.0 mm 1000LP Feed to reduce phosphorus discharges. The Final Permit has been revised to clarify that the Permittee must use the lowest phosphorus feed practicable for each size and life stage of fish. EPA maintains that the narrative requirements, coupled with the water quality-based TP limits in the Final Permit, will ensure that the Facility uses fish feed with the lowest practicable concentration of phosphorus and follows a strictly enforced protocol that ensures the most efficient feeding.

Finally, the comment requests that the permit require the Facility to significantly improve its cleaning operations, including, at a minimum, measures that will result in the *prompt* removal of fish feces and food waste *before* phosphorus dissolves from such materials into the water. The comment suggests that the "discharge of significant volumes of total suspended solids and other pollutants" are evidence that the existing BMP Plan has been ineffective. As explained above, the narrative provisions for solids control in the Draft Permit and in the 2014 Permit, which informed the current BMP Plan, are based on the ELGs for this point source category. 40 CFR § 451.11. The proposed ELGs for CAAP facilities established numeric maximum daily and monthly average TSS limits of 10 mg/L and 6 mg/L, respectively, based on the best practicable control technology currently available. However, the numeric limits proposed in the ELGs were never finalized. Quarterly monitoring from June 2015 through June 2020 reported a single maximum daily TSS in exceedance of 10 mg/L (11 mg/L at Outfall 001 in September 2017) with the next highest reported value being 7 mg/L. Generally, the PMSFH reported relatively low concentrations of TSS, with many quarterly samples below the minimum detection level of 2 mg/L. For a more detailed discussion of minimum detection levels see Response to Comment VI.4.

4. The Draft Permit Should Be Amended to Include More Stringent Standards to Account for the Impacts of Climate Change

Climate change is having, and will continue to have, serious implications for water quality in New Hampshire. Changes in precipitation patterns, including more extreme storm events and drought, as well as increasing temperatures, will affect water quality and exacerbate eutrophication. *See, e.g.,* WMP at 42 (generally discussing the impacts of climate change and stating: "Increasing storm frequencies will flush more nutrients to surface waters for algae to feed on and flourish under warmer air temperatures."). EPA should amend the Draft Permit to

include more protective effluent limitations not only to address the water quality issues discussed above, but also to provide some margin of safety against the real, and increasing, impacts of a changing climate.

EPA Response

The comment does not specify which effluent limitations should be made more protective or how a "margin of safety" should be applied, nor does the comment explain how water quality will be affected such that the Draft Permit's limits would be inadequate. The Final Permit, as explained in this Response to Comments, establishes technology-based limits based on the best practicable control technology currently available for this point source category consistent with 40 CFR § 451.11 and water quality-based limits designed to meet water quality standards in the receiving water. As discussed in Response to Comment VI.2, the total phosphorus WQBELs contained in the permit are based on a conservative approach that contains a margin of safety. EPA has no basis for establishing more stringent limits, at this time, to account for unqualified and unquantified future impacts due to climate change. However, NPDES permits expire every five years, at which time EPA will review available data, including any changes in conditions at the Facility or in the environment which would warrant more stringent limits.

5. The Draft Permit Should be Amended to Require Design of a Treatment System Capable of Meeting Increasingly Stringent Effluent Limits

The City of Portsmouth's approach to designing a significant upgrade of its Peirce Island wastewater treatment facility ("WWTF") is instructive and should be followed in this case. There, after piloting several technologies, Portsmouth designed and constructed a facility that, without additional infrastructure, could achieve varying total nitrogen effluent limitations. While Portsmouth is operating the WWTF under an obligation to achieve an effluent limitation of 8 mg/l total nitrogen, should EPA require more a more stringent limitation, the facility can comply simply through operational changes. EPA should explicitly require pilot testing within the currently contemplated five-year design and construction period (*see* Schnieter Comments (Attach. 4) at 2-3) and a design that can achieve increasingly stringent effluent limitations, should they become necessary, without further capital investment.

EPA Response

The 2007 NPDES Permit for the Peirce Island WWTF established limits that required compliance with the technology-based, secondary treatment standards of the CWA.[3] EPA and the Facility entered into a Consent Decree in 2009 to upgrade the system to meet secondary treatment standards. This Consent Decree was modified in 2012 and 2017 and has since required seasonal treatment for total nitrogen. The City took measures to ensure that the final design provided flexibility but neither the NPDES permit itself nor the Consent Decree require the treatment system to be capable of achieving more stringent standards in the future.

[3] City of Portsmouth New Hampshire Department of Public Works: Wastewater & Sewer. Peirce Island Wastewater Facility. https://www.cityofportsmouth.com/publicworks/wastewater/peirce-island-wastewater-facility

Under the CWA, the permitting authority impose effluent limitations but must "allow the permittee to choose its own control strategy." *Am. Iron & Steel Inst. v. E.P.A.*, 115 F.3d 979, 996 (D.C. Cir. 1997) Accordingly, the Final Permit for PMSFH establishes water quality-based TP limitations but does not dictate how the Facility complies with the limits. The PMSFH may achieve compliance by installing a treatment system and, as with the Peirce Island WWTF, may consider designs that allow for additional flexibility in the future.

The Peirce Island WWTF project is complex and the contract for the upgrade is $75 million. Given the substantial cost, it is reasonable that the WWTF would want to ensure flexibility in the design to ensure that additional pollutant reductions may be addressed in the future without significant additional capital expenditure. As CLF points out elsewhere in its comments, unlike most WWTFs, the PMSFH may achieve reductions in pollutant loads from operational changes (e.g., reducing fish production) in addition to or, possibly, in place of a treatment system. Finally, the Peirce Island Consent Decree establishes seasonal total nitrogen limits of 8 mg/L. The water quality-based TP limits in the Final Permit (12 µg/L) are established at the end-of-pipe prior to dilution. In other words, the Final Permit's TP limits are already at target in-lake values derived to be consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire.

6. The Draft Permit Should be Amended to Ensure Monitoring Results Accurately Measure the Facility's Impact

It is essential that monitoring required by the permit provide information that accurately reflects the impacts of the PMSFH's operation. According to Dr. Rensel, an expert in the operations and impacts of fish hatcheries:

> It is well known that nutrient pollution from freshwater fish hatcheries occurs at a constant rate except for large episodic increases associated with episodic events such as feeding, fish handling, cleaning and stoplog removal. If sampling was purposely conducted on days when limited or no normal activities occur, as Michael Gelinas, a resident of the region and a Lay Lakes Monitoring Program volunteer, has suggested occurs at the PMSFH, sampling could be easily biased to lower than normal levels.

Rensel Report (Attach. 1) at 4. Any final permit regulating the Facility should contain provisions requiring that sampling be conducted on days of normal operation (e.g., feeding and cleaning) and that the Facility report what activities did or did not occur prior to and during sampling. *Id.*

EPA Response

The comment requests that the Draft Permit be changed to require sampling on days of "normal" operation to accurately reflect the impacts of the hatchery. The comment refers to the report provided by Dr. Rensel, which in turn refers to anecdotal observations that sampling could occur when limited or no "normal" activities occur. The comment appears to suggest that the permit include a provision that would ensure that pollutant concentrations and loads are not

underestimated if sampling is conducted only on days when "normal" operations such as feeding and cleaning do not occur. According to the 2019 Best Management Practices BMP) Plan, raceways are cleaned on a rotating schedule once per week (once every two weeks in winter) and tanks are cleaned once every two weeks. *See* AR-88 p. 4. Feeding rates depend on the life stage: fry are fed several times per day while juvenile and adult fish are fed once per day. *See Id*. p. 5. Based on the BMP Plan, "normal" operations, occur on a daily basis and thus should be covered by any day where sampling occurs.

Footnote 4 in Part I.A of the Draft Permit requires that "at least one weekly sample shall be collected on a day when raceway/and or tank cleaning operations are occurring." Pollutants that must be monitored on a weekly basis include TSS, BOD, pH, TN, TP, dissolved oxygen (DO), DO saturation, and temperature. In other words, under the Draft Permit, at least one weekly sample for all major pollutants during each reporting period must occur during cleaning operations. The comment does not explain why the existing provision from the Draft Permit (which requires at least one weekly sample to occur during cleaning) does not sufficiently address the issue. The Final Permit retains the provision requiring one of the weekly samples during each monthly reporting period to occur during a cleaning event. The remaining weekly samples are not required to be collected during cleaning operations but are likely to occur on the same day as feeding because feeding occurs on a daily basis at a minimum. Finally, the Draft Permit (I.A. footnote 3 on p. 7) requires that effluent samples yield data representative of the discharge. In this case, effluent samples must yield data that is representative of "normal" operations of the hatchery, including cleaning and feeding.

Finally, in order to meet the water quality-based effluent limits in the Draft Permit, the Permittee will likely have to install a treatment system, which may include treating the full flow from the hatchery. The new treatment system may change effluent hold times and, as a result, the synchronization between daily hatchery operations and effluent sampling. EPA believes that the increase in monitoring for most pollutants from quarterly in the 2011 Permit to weekly in the Final Permit will ensure that monitoring data is representative of hatchery effluent over a range of activities and will be representative of the effluent from any new treatment system that the Permittee may install to meet effluent limits.

7. The Draft Permit Should be Amended to Eliminate the Compliance Schedule; EPA Should Instead Proceed with a Consent Decree, in U.S. District Court, to Secure a Construction and Treatment Schedule

7.1 The Compliance Schedule violates the state's water quality standards and should be eliminated; EPA should proceed with a Consent Decree to secure and enforce the construction schedule

New Hampshire's state water quality standards allow an NPDES permit to include a compliance schedule only under limited circumstances that, in this case, do not apply. Specifically, Rule Env-Wq 1701.03 (a), titled "Compliance Schedules in NPDES Permits," states:

> A National Pollutant Discharge Elimination System (NPDES) permit issued or renewed for a discharge to New Hampshire surface waters, as defined herein, shall not specify a

> schedule leading to compliance with New Hampshire or federal surface water quality standards, or both, *unless*:
>
> (1) The permittee cannot comply with the permit limits or other requirements immediately upon issuance of the permit; and
> *(2)* The compliance schedule is provided to afford the permittee adequate time to comply with one or more permit requirements or limitations that are based on new, newly interpreted, or revised water quality standards that became effective after issuance of the original discharge permit and after July 1, 1977.

(Emphasis added). While the state water quality standards at issue in this proceeding (discussed above) all have an effective date of December 1, 2016, such effective date is the result of a re-adoption and renumbering of former rules. *See* Chapter Env-Wq 1700 Revision Notes #1 and #2. Rather, the above-referenced state water quality standards were adopted and put into effect long before 2016, and long before the Facility's prior permit. They are neither new, newly interpreted, or revised. Moreover, and more importantly, the Facility could immediately comply with the permit limits by amending its operations. *See* Part III, *supra.*

EPA should follow the same approach it did in the NPDES permitting process for another significant source of pollution: the Peirce Island WWTF in Portsmouth. There, after issuing an NPDES permit requiring the WWTF to substantially upgrade (from primary to secondary treatment), EPA initiated an action in the U.S. District Court (NH) for the purpose of entering a consent decree to address the necessary WWTF construction. We urge EPA to follow a similar approach, with a detailed construction schedule, to ensure timely completion and operation of a new treatment system at the Facility.

EPA Response

EPA included a compliance schedule in the draft permit in recognition of the need for the PMSFH to plan, design, and construct significant treatment/design upgrades in order to meet the new TP limits. Although there are several options available to the Agency to address such a situation, EPA determined it would benefit from receiving public comment on an appropriate schedule for the facility to undertake such actions. Indeed, the comments submitted by this commenter and others, *see* Comments V. and VI.5, have provided useful information to the Agency on this issue.

Although EPA does not agree that Rule Env-Wq 1701.03 (a) precludes a compliance schedule under the circumstances here, EPA has opted to address compliance with the TP limitation through the issuance of an administrative order rather than the inclusion of a compliance schedule in the permit, upon consideration of the technical, logistical and scheduling contingencies around the treatment plant upgrade. Rather, as advocated by the Commenter, EPA will address the Facility's expected inability to meet the new TP limits through use of its enforcement authority. At present, EPA expects to include a schedule for completing necessary treatment/design upgrades in an administrative order. *See* CWA Section 309(a). EPA anticipates such an order containing both interim planning/design/construction milestones, such as those contained in the Draft Permit, as well as interim TP effluent limitations. *See* Response to Comment VI.5. EPA has determined that use of an administrative order is appropriate here in

light of the uncertainty, among other things, regarding the extent of treatment plant upgrades necessary and the most expedient timeframe in which they can be achieved. Use of an administrative order will provide the Agency with appropriate flexibility to ensure that compliance with the final TP is achieved as expeditiously as possible, along with significant interim TP limits.

While EPA agrees with the commenter that use of its enforcement tools is appropriate in this case, EPA does not agree that pursuit of a judicial consent decree, as was used by the Agency with regard to the City of Portsmouth Peirce Island WWTF, is necessary at this time. Based on the Region's history with the Facility and our understanding of the current situation, EPA anticipates that an administrative order will be the most efficient and effective way to implement a construction schedule and interim TP limits to begin to address the TP discharges from the PMSFH in a timely manner. EPA will be able to issue an administrative order in significantly less time than would be required to negotiate and finally execute a consent decree. Should it become evident to the Agency a different approach is needed, it can exercise its enforcement discretion to pursue alternative routes, such as a judicial consent decree.

Second, the comment states that a compliance schedule is unnecessary because the Permittee can comply with the effluent limitations immediately. *See also* Response to Comment III.3 and IV.1. The comment does not provide any technical basis to support the proposition that the permittee can comply with the new TP immediately. The Agency expects there are certain operational changes the Facility can undertake in the short-term to reduce TP and expects to enshrine such reductions in the form of interim effluent limits in an administrative order. However, EPA does not have a technical basis for concluding that the Facility could meet the final TP limit without significant treatment/process upgrades. Those expected, necessary upgrades will require time to plan, design, and construct and thus will not be achievable at the time of permit issuance.

IV. Comments from Dr. R. Wane Schneiter

The Conservation Law Foundation (CLF) has retained me as an expert consultant to assist them in their ongoing lawsuit against the commissioners of the New Hampshire Fish and Game Commission over phosphorus discharged from the Powder Mill State Fish Hatchery. In this capacity, I have become familiar with how the Hatchery operates and how it manages its wastewater. I have also visited the Hatchery and observed its operations.

1. The New Permit Should Require Powder Mill State Fish Hatchery to Take Immediate Steps to Reduce the Amount of Phosphorus Discharged.

The approach to the design and implementation of a treatment system for the Powder Mill Hatchery should include the following operational elements, which can be implemented immediately and would ultimately have a positive impact on any water treatment options it decides to implement later on:

1. **Reduce the number of fish produced at the Hatchery.** The Hatchery should reduce its fish production during the interim period before the new wastewater treatment system is

operational. The phosphorus and nitrogen in the Hatchery wastewater come from uneaten fish food and fish waste. There is a direct correlation between the amount of fish at the Hatchery and the phosphorus and nitrogen levels of the Hatchery's effluent: fewer fish can be fed less feed and produce less waste. This correlates with the discussion in paragraph 3 below.

2. **Reduce phosphorus being added through fish food.** The Hatchery should calculate the lowest practical concentration of phosphorus that can be present in the fish food and switch to fish food with this lower phosphorus concentration. The Hatchery should also follow a strictly enforced protocol for fish feeding to ensure that it is feeding only as much food as is necessary. Lower phosphorus fish food and stricter fish feeding protocols would ensure that the mass of total phosphorus requiring removal is held to the minimum practical limit. This is consistent with the intent of the BMP Plan and will minimize unnecessary loading of total phosphorus. Although reducing phosphorus in fish food and strict feeding is currently part of the BMP Plan, I am not confident that it is optimized by current practice.

3. **Reduce the water flow through the Hatchery.** The Hatchery should reduce the water flow from Merrymeeting Lake through the Hatchery to the maximum extent possible without negatively impacting fish health. This will have two benefits. First, a lower water flow will result in a smaller volume of water requiring treatment. This will reduce the size and capacity of treatment facilities and their capital costs. A second benefit of lower water flow is the improved operating efficiency associated with treating less diluted water. In recent years, Hatchery operators have withdrawn the maximum allowable flow from Merrymeeting Lake even though salmon operations have been discontinued at the facility. I suspect that the increased flow was an attempt to dilute the discharge from the Hatchery and consequently reduce the total phosphorus concentration in the effluent while having no impact on the total phosphorus mass loading to the river.

EPA Response

The comment poses several operational changes that can be made at the PMSFH prior to the installation of any treatment system that the commenter asserts will reduce the existing phosphorus load and increase the efficiency of any future wastewater treatment system.

First, the commenter proposes the Hatchery reduce its fish production during the interim period before an expected new wastewater treatment system is operational. Levels of TP in the effluent are related to the amount of fish feed used, and less fish would require less food and produce less waste, which will result in a reduction in the phosphorus and nitrogen levels of the Hatchery's effluent. As the comment points out, the PMSFH has already shifted the Atlantic salmon production portion away from the hatchery, which has reduced the fish biomass and feed requirements proportional to the amount of fish that were transferred. The comment does not request any specific change to the Draft Permit related to the number of fish at the hatchery. However, EPA anticipates including TP interim limits in the administrative order it plans to issue after the permit is finalized. *See* Responses to Comments III.3 and VI.5. In order to meet the interim TP limits, the Permittee may elect to reduce the biomass at Powder Mill.

Next, the commenter proposes that the Hatchery should switch to fish food with the lowest practical concentration of phosphorus. As the commenter points out, lower phosphorus fish food can lower the total phosphorus in the effluent. In Response to Comment III.3, EPA explained that PMSFH switched to a low phosphorus feed in July 2019. *See* 2019 Fact Sheet p. 18, AR-92, AR-93. The commenter also requests that the Permittee follow "a strictly enforced protocol for fish feeding to ensure that it is feeding only as much food as is necessary." The 2011 Permit (Part I.B.4.a.i) and the Draft Permit (Part I.C.3.a.1) require the Permittee to maintain a BMP Plan that addresses efficient feed management and feeding strategies which limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of animal growth in order to minimize potential discharges of uneaten feed and waste products. The 2011 Permit and Draft Permit also require the Permittee to continue use of low phosphorus feed. These conditions have been retained in the Final Permit. The commenter suggests that the current BMPs related to phosphorus in feed and strict feeding practices are not optimized under the current practice but does not request any specific revisions to the solids control requirements. The Draft Permit establishes a TSS benchmark of 10 mg/L to ensure that the technology-based BMP requirements are effectively controlling solids by limiting the feed input to the minimum amount reasonably necessary. An exceedance of a maximum daily TSS concentration of 10 mg/L requires the Permittee to take action to investigate the cause of elevated concentrations, adjust the BMPs as necessary, and report compliance with the TSS benchmark within 30 days from the initial exceedance. The Final Permit has also been revised to clarify that the Permittee must use the lowest phosphorus feed practicable for each size and life stage of fish.

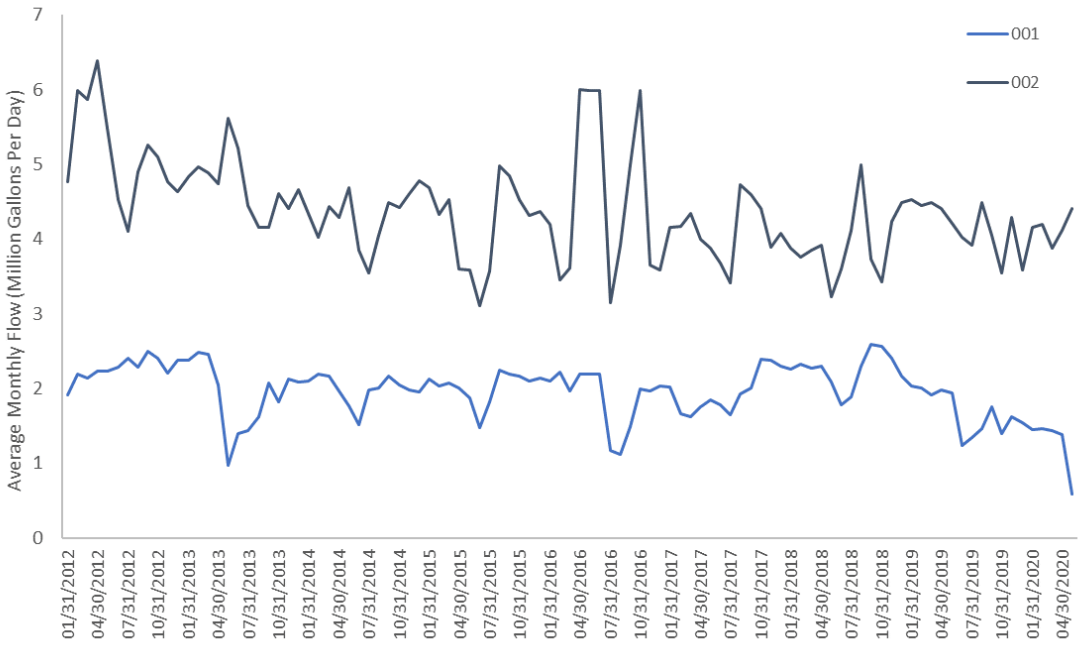
Finally, the commenter proposes that the Hatchery reduce the water flow from Merrymeeting Lake through the Hatchery to the maximum extent possible. The commenter asserts that Hatchery operators have withdrawn the "maximum allowable flow" from Merrymeeting Lake in recent years, even as fish production has been reduced (e.g., by elimination of Atlantic salmon production). Flow limits at wastewater treatment facilities are typically established based on the design flow of the treatment system. Flow limits at industrial facilities are typically established based on the design capacity of any pumps or the process water usage rate. In this case, there is no existing treatment design or pump capacity to inform a flow limit and the Draft Permit's average monthly limits are based on the existing flow rates.

The PMSFH will likely have to install wastewater treatment to meet the water quality-based TP limit in the Final Permit. Minimizing the daily effluent flow through the treatment system will improve efficiency and reduce cost, as the commenter notes. As such, flow will likely be considered during the design of any treatment system that the Permittee ultimately selects to meet the water quality-based TP limit in the Permit. However, at this time there is no basis for setting a flow limit based on a design flow or pump capacity, and it is premature for EPA to establish a flow limit for a treatment system that has not been designed or constructed. EPA will likely establish a flow limit based on the design of the treatment system during the next permit re-issuance when the operational changes and treatment system will have been implemented.

The commenter suggests that "Hatchery operators have withdrawn the maximum allowable flow from Merrymeeting Lake" in recent years and speculates that the "increased flow was an attempt to dilute the discharge…and consequently reduce the total phosphorus concentration in the effluent while having no impact on the total phosphorus mass loading to the river." The reported

monthly average flow from January 2012 through May 2020 has remained relatively consistent over time and there is no indication that the Permittee has increased water withdrawals in recent years. *See* Figure IV-1. In fact, the mean total flow in recent years (6.0 MGD for the period from January 2017 through May 2020) is slightly less than the mean total flow for the period from January 2007 through May 2020 (6.5 MGD). The 2014 Permit requires the Permittee to report only the average monthly flow. EPA is unclear what the "maximum allowable flow" from the lake refers to and the comment does not explain or provide any evidence that the water withdrawals have increased in recent years.

Figure IV-1. Reported average monthly flow (in million gallons per day) at Outfalls 001 and 002 from January 2012 through May 2020.



Moreover, while establishing a maximum daily flow limit would ensure that the load from the hatchery is consistent, the comment does not explain why such a limitation is necessary to meet water quality standards. A maximum daily flow limit would establish an additional control on the TP load discharged on a daily basis. Such a limit is reasonable where the pollutant load can have short-term consequences (such as for a toxic pollutant) that would not be adequately controlled on an average monthly basis or where operations can balance limited days of extremely high loads by cutting operations to near zero, enabling the average monthly limits to be met. The water quality standards at issue are primarily related to cyanobacteria blooms caused by excessive levels of phosphorus, which are not associated with acute (short-term) impacts. EPA has interpreted the narrative water quality standards at Env-Wq 1703.14 to establish acceptable levels of TP (an indicator pollutant) to reduce chlorophyll-a response, and therefore algal blooms, on an average monthly basis. In addition, fish at the hatchery have to be fed every day and production raceways and tanks cleaned regularly. The daily flow and TP concentration may fluctuate on any given day; however, the Permittee must meet the TP limit as both a concentration and a load (which considers flow) on an average monthly basis. If the TP or flow

spiked during a few days in a calendar month the Permittee would be unlikely to meet the average monthly limits because regular operations must continue for the remaining days.

The Draft Permit proposed reporting the TP load for each outfall and cumulative (sum of the two outfalls) TP load limits on an annual and seasonal (June through September) basis. In response to comments on the Draft Permit, the Final Permit establishes a single, year-round, concentration-based average monthly TP limit at each outfall and a cumulative, annual mass-based TP limit for the two outfalls combined, which was calculated from the average monthly concentration-based TP limit and the average monthly flow limit. *See*, *e.g.*, Response to Comment VI.2. The concentration-based TP limit applies at the end-of-pipe because the flow through the hatchery comprises all of the outflow from the Merrymeeting Lake to the Merrymeeting River at certain times of year (i.e., there is no dilution of the effluent). The Permittee must sample TP on a weekly basis with at least one sample conducted during a cleaning event. In addition, the Final Permit has been changed to require flow monitoring with a meter or totalizer, rather than an estimate, to ensure that the flow is accurately measured, as the commenter requests. A more accurate measure of the actual flow at the hatchery will enable a more precise estimate of pollutant loads and will assist the Permittee to ensure that the average monthly flow limitations at each outfall are met. Finally, the Permittee must also comply with Part II.B.1 of the Final Permit, which requires the Permittee to properly operate and maintain all facilities and systems of treatment and control which are installed or used by the Permittee to achieve compliance with the conditions of the Permit. Therefore, although the Final Permit does not establish a maximum daily limit on flow, the Permit will still be protective of water quality standards in the receiving water. *See also* Responses to Comment IV.1 and VI.6.

2. The Draft Permit Should Explicitly Require That Pilot Testing Be Completed During The Preliminary Design Period.

A typical sequence for evaluating and selecting treatment options followed by their design and construction consists of pilot testing, evaluating operating conditions, developing design parameters, preparing the design, bidding and contractor selection, construction, and start-up. Pilot testing can occur simultaneously for multiple potentially feasible treatment options.

Pilot testing is necessary in order to determine treatment efficiencies and ensure that the new treatment system will be capable of reducing total phosphorus and total nitrogen concentrations to the required level, with the ability, through operational modifications, to achieve lower levels if necessary.[1] The design must include safety factors to allow for variability in a variety of design and operating factors and to provide reasonable assurance that permit exceedances will not occur.

Requiring that pilot testing take place during the design phase of the project should not increase the amount of time allocated for design. The draft permit allows 30 months for the design and bidding stage of the project: four months for bidding and contracting with a consultant to complete the engineering design, 20 months to complete a preliminary design, and six months to complete a final design. Based on my experience working on wastewater engineering projects, the pilot testing, design, and bidding process for this project should reasonably take between 20 and 30 months all together.

EPA Response

The Final Permit's TP limits are water quality-based and are designed to ensure the hatchery effluent will be at or below a target in-lake concentration consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. In response to comments made on the Draft Permit, EPA has elected to address the PMSFH's inability to immediately comply with the new TP limits through an administrative order, rather than a compliance schedule in the permit. EPA anticipates this administrative order will include a design and construction schedule similar to that contained in the Draft Permit. The method of compliance with the water quality-based limits is at the discretion of the Permittee. EPA expects that a pilot phase will be integral to the installation of any treatment system in part because, as the comment points out, to determine treatment efficiencies, optimize operation to achieve the required TP limits, and establish safety factors. However, the Final Permit does not mandate any specific technology and including requirements specific to piloting is beyond the scope of the NPDES permit. In addition, as the commenter also points out, EPA expects any pilot testing could be completed within the timeframes that will be set out in the administrative order's schedule. For these reasons, no revision to the Final Permit is necessary to accommodate a pilot phase.

3. It Is Feasible to Build a Wastewater Treatment System That Meets One Standard Year-Round.

There are no technological or engineering reasons to set different standards for different times of year as the Draft Permit does. It is absolutely possible to design a wastewater treatment system capable of meeting a limit of 10 ppb both from October through May, and from June through September. Because the flow through the Hatchery remains relatively consistent throughout the year, there would be no additional challenges posed by treating wastewater in the winter months.

Furthermore, because phosphorus is a stock pollutant, any phosphorus discharged during the winter months will still be present in the ecosystem during the more ecologically sensitive summer months. Stock pollutants, like phosphorus, do not break down. Once they are in the environment, they stay forever and accumulate in sediment. This means that any phosphorus discharged during the winter when the phosphorus limit is higher will not disappear – it will still be present in the sediment of the receiving waters during the summer. To ensure that the phosphorus levels are low enough during the summer when there is the greatest risk of cyanobacteria blooms and to minimize phosphorous accumulation in sediments, the new permit needs to set one low limit for the entire year.

[1] During the pilot testing process, the engineering consultants may determine that reducing total phosphorus concentrations to 10 ppb rather than 14 ppb would not represent a significant difference in how a system is designed or operated. That is, when all design and operating uncertainties are accounted for, the real difference between 10 ppb and 14 ppb may, in reality, be negligible.

EPA Response

Under the CWA, the permitting authority impose effluent limitations but must "allow the permittee to choose its own control strategy." *Am. Iron & Steel Inst. v. E.P.A.*, 115 F.3d 979,

996 (D.C. Cir. 1997) Accordingly, the Final Permit for PMSFH establishes water quality-based TP limitations and sets out a schedule to achieve compliance with these limits but does not dictate how the Facility complies with the limits.

In response to concerns raised in this and similar comments, EPA revisited the basis of the Draft Permit's TP limits and determined that more stringent TP limits are warranted to ensure that water quality standards are met. *See, e.g*., Responses to Comments VI.2 and VI.3. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Response to Comment VI.2.

V. Comments from New Hampshire Fish and Game Department

Thank you for the opportunity to review and comment on the draft NPDES permit for the Powder Mill State Fish Hatchery (NH000710). After reviewing the draft permit, there are several areas we would like to address.

First, in the fact Sheet on page 12 under section 3.2, paragraph 2. "Hatchery House" water should be included with Outfall 002. The current Fact Sheet suggest that the water from the Hatchery House discharges through Outfall 001. Also in section 3.2, paragraph one, the Fact Sheet suggests that the facility "pumps water from Merrymeeting Lake". Although Merrymeeting Lake is the water supply for the Powder Mill Fish Hatchery, water is gravity fed from a submerged collection box through a series of water supply pipelines. No active mechanical pumping occurs.

Secondly, Figure 3: Schematic of Water Flow depicts the incorrect "Solids Treatment Tanks" in the diagram. The three rearing tanks that have been modified into solids storage and treatment tanks are two raceways over to the left in the diagram.

The third concern we have in the draft permit is under section E: State Permit Condition. Specifically, section 4 "Compliance Schedule". This section details a compliance schedule which is dependent on an application and loan process consistent with NHDES' CWSRF program. Although the NHFG intends on applying for funds consistent with the schedule detailed within the draft permit, there is no guarantee that these funds will be awarded and the NHFGD may need to seek alternative funding through the State of New Hampshire's Capital Budget process. If this scenario was to occur, NHFGD will not have an appropriation in time to meet the compliance schedule detailed in the draft permit.

Also, depending on the Wastewater Treatment Plan Design, there is a possibility that NHFG may need to consolidate outfalls 001 and outfall 002. There is also a potential that the design may require us to move an outfall to another location onsite in the event that we need to adjust for a larger footprint or to provide the appropriate gradient for whatever system is in the proposed design.

Lastly, the NHFGD request that the range of pH values in the permits be adjusted from a range of 6.5-8.0 s.u. to 6.0-8.0 s.u. as we have had in some of our NHFG Hatchery NPDES permits in the past. The water supply for the hatchery is Merrymeeting Lake and is already listed on the NHDES 303(d) list in NH as an impaired waterbody for pH due to acid deposition (Fact Sheet page 20, section 5.1.4). Data collected from hatchery staff shows that the influent water for outfall 002 had an average pH of 6.31 s.u. from 1/6/16-1/2/2020 (data available upon request). Although the draft permit allows the facility to demonstrate compliance by determining that the outfall is within 0.5 s.u. of the influent pH, NHFG feels that lowering the allowable pH range to 6.0-8.0 would more accurately reflect the conditions of the water source and would reduce the need for additional sampling and reporting. According to the chart included in the document "Environmental Fact Sheet, Acid Rain (Deposition), NHDES 2019", acid deposition for central New Hampshire still falls below 5.0 s.u. and should be considered.

EPA Response

The commenter provides several corrections to the 2019 Fact Sheet and raises concerns about certain conditions in the Draft Permit's compliance schedule as well as the pH limits. The 2019 Fact Sheet is not reissued with the Final Permit and, as a result, will not be corrected. However, this Response to Comments document serves as acknowledgement of those errors. EPA encourages NHF&G to ensure that the application for the next reissuance of its NPDES permit include these corrections in any description of flow, including an updated flow diagram.

The comment explains that the certain State Permit Conditions in the Draft Permit ("Compliance Schedule") are dependent on securing funds through NHDES' Clean Water State Revolving Fund (CWSRF) program or an alternative funding mechanism such as through the State of New Hampshire's Capital Budget process. Part I.E of the Draft Permit has been removed and the conditions for assessing "natural background" pH in accordance with the water quality standard at Env-Wq 1703.18 have been added to footnote 8 to Parts I.A.1, I.A.2, and I.A.3. In response to several comments received on the Draft Permit, EPA is not including a compliance schedule in the Final Permit. *See* Response to Comment III.7.1. Instead, EPA anticipates issuing an administrative order to PMSFH which will contain a schedule for planing, design, and construction of the necessary treatment upgrades. To the extent the Hatchery is unable to meet the schedule milestones contained in that order due to funding issues, it will need to work with EPA's Enforcement and Compliance Assurance Division (ECAD) to discuss appropriate responsive measures.

The comment raises the possibility that NHFG would consolidate Outfalls 001 and 002 or require an outfall at another location on the property, depending on the design on any treatment system. EPA agrees that the Permittee should explore all possible design options, including configurations that would require alterations to the existing outfalls. Part I.A.3 of the Draft Permit included an annual TP limit based on the load of Outfalls 001 and 002 combined ("SUM") to accommodate consolidation of the outfalls. In other words, rather than set a load limit based on the concentration and flow at each outfall, the Draft Permit established a limit on the TP load for the total hatchery flow. The Final Permit also establishes an average monthly and average weekly limit for TP concentration from the hatchery in response to comments received on the Draft Permit. *See* Responses to Comments III.2.1 and VI.2. EPA believes that limiting the total TP load of the combined outfalls allows some flexibility in how the Permittee

proportions the load over the two outfalls, including in the event that the Permittee consolidates the flow to a single outfall. In addition, Part II.D.1.a of the Draft Permit requires the Permittee to report as soon as possible any planned physical alterations or additions to the facility under certain conditions, including when the alteration or addition could significantly change the nature or increase the quantity or pollutants, or result in a significant change in disposal practices and may justify the application of permit conditions that are different from or absent in the existing permit. EPA expects that major changes to the outfall locations at the Facility will result in notification to EPA and may require a modification of the Final Permit.

Finally, the Permittee requests that the Final Permit include a pH limit adjusted from a range of 6.5-8.0 s.u. to 6.0-8.0 s.u., similar to the pH limits in other NHF&G hatchery NPDES permits. The current NPDES Permit's for the Berlin Hatchery (NH0000621) and Twin Mountain Hatchery (NH0000744) have pH limits in the range of 6.0 to 8.0 s.u. In each case, NHF&G completed and submitted to NHDES a pH study demonstrating that the lowering the minimum pH limit from 6.5 s.u. to 6.0 s.u. still met the in-stream pH range of 6.5 to 8.0 s.u. in the receiving water. At the same time, NPDES for the New Hampton, Warren, and Milford Hatcheries have a minimum pH limit of 6.5 s.u. NHDES allows for a pH demonstration and limit adjustment in one of two cases: 1) if the range should be widened due to naturally occurring conditions in the receiving water; and 2) the naturally occurring receiving water pH is not significantly altered by the Permittee's discharge. As the comment points out, Merrymeeting Lake is listed in the 2018 303(d) List as impaired for pH due to acid deposition, which is not naturally occurring (i.e., conditions that exist in the absence of human influences). For this reason, the Permittee does not satisfy item 1. Secondly, at certain times of the year all of the water to the Merrymeeting River travels through the hatchery and there is no available dilution. For this reason, the Permittee does not satisfy item 2 that the receiving water pH will not be significantly altered. Because neither condition is satisfied, the Permittee is not eligible for the pH adjustment that has been afforded to other hatcheries located on different waterbodies with different conditions. If effluent pH is less than 6.5 s.u., the Final Permit (footnote 8 to Parts I.A.1, I.A.2, and I.A.3) allows the Permittee to demonstrate compliance with the pH limits by determining that the effluent pH is within 0.5 s.u. of the influent pH. Sampling pH is neither costly or particularly burdensome and the Permittee should be able to continue sampling the pH of the influent to demonstrate compliance with the pH limits in the Final Permit.

VI. Comments from Dr. Fred Quimby

I appreciate the EPA's development of this draft and agree with many of the provisions contained within. However, there are several comments I would like to make as a resident of New Durham, as one of the original discovers of the Downing Pond, Merrymeeting River-cyanobacteria bloom which started our town's engagement in 2015, and as chair of the New Durham Water Quality Committee. I spoke at the EPA public session on February 5, 2020 and handed in my remarks at the meeting. Since this document includes all the comments made at the meeting, the meeting remarks can be ignored. This represents all my comments.[4]

[4] As the comments notes, Dr. Quimby provide oral and written comments and the public hearing, as well as more detailed written comments submitted during the public notice period. *See* AR-113, AR-125, AR-132. As the

I would like to begin this letter by emphasizing a point which is never made clear in the Fact Sheet. The Powder Mill State Fish Hatchery (PMSFH) is responsible for polluting the Merrymeeting River (MMR) and causing the downstream ponds, including: Marsh, Jones and Downing Ponds, to be classified, via designation on the 303 (d) list, as impaired for cyanobacteria and associated hepatotoxins. They are all impaired for Primary Contact Recreation. This was done by the PMSFH through its discharge of the pollutant, phosphorus, in concentrations and annual loads so high that the Merrymeeting River underwent severe degradation which, based on phosphorus concentration and a host of other environmental variables, resulted in Marsh Pond becoming eutrophic (the most degraded). So, the public can be aware where the responsibility lies, I will paraphrase the evidence.

In 2017 the Towns of New Durham and Alton, NH created a joint town committee, which was reportable to the board of Selectmen on both towns, called the Cyanobacteria Mitigation Steering Committee (CMSC). That committee in 2018 hired, through a process based on qualifications, Forrest Bell Environmental Associates (FBE) to develop a Merrymeeting Watershed Management Plan (MMWMP). Over the course of 16 months this group reviewed all the water quality data collected over three years by the Lay Lakes Monitoring Program (LLMP) volunteers in cooperation with the Laboratory for Freshwater Biology at the University of New Hampshire (LFB-UNH), they developed a Site Specific Project Plan (SSPP), conducted modeling which resulted in a Lakes Loading Response Model Report (LLRM), conducted a build-out analysis and report (BOA), conducted a watershed survey of stormwater runoff/erosion sites and engineering plans for each site's remediation, conducted a Merrymeeting Lake shoreline survey and combined this with a complete review of the area's natural resource inventory, a septic system inventory, and a history of the watershed to produce the final MMWMP.
Marsh Pond, the first pond downstream from the PMSFH, currently has a mean annual phosphorus concentration (PC) of 17.7 ug/L (where anything above 12 is considered eutrophic; pre-colonial Marsh Pond estimated PC = 4ug/L).This mean concentration was created from the addition of the following phosphorus loads (PL): from Merrymeeting Lake PL=85kg/y (17% of total), from the atmosphere, waterfowl, internal loading, and septic systems combined PL=19 kg/y (3%); other tributaries and stormwater runoff to Marsh Pond PL=66 kg/y (13%) and the PMSFH PL=342kg/y (67%). If the PMSFH were removed from these other sources the mean annual in-lake PC for Marsh Pond would be 6.2 ug/L and the pond would be classified as oligotrophic and the likelihood for a cyanobacterial bloom nearly impossible (Merrymeeting River and Lake Watershed Management Plan Public Meeting June 19, 2019; Merrymeeting River and Lake Watershed Management Plan, 2019).

The influence of the PMSFH on waterbodies below Marsh Pond is also significant. The upstream load from PMSFH to Jones Pond is 320 kg/y (62% of the total), the PMSH load to Downing Pond is 299 kg/y (57%) and the PMSH load to the Merrymeeting River at Alton is 243 kg/y (28% of the total). The damage being perpetuated now by the PMSFH is being felt all the way to Lake Winnipesaukee. Currently the mean annual PC at the Alton Dam is 15.0 ug/L and if the PMSFH were removed it would be 11ug/L and classified as mesotrophic. This information is all present in the MMWMP which is posted on each town's web site.

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comments were substantially similar, Dr. Quimby has advised EPA to consider the written comments as his complete submission and EPA has reproduced and responded to them in detail here.

EPA Response

First, as the comment notes, the Cyanobacteria Mitigation Steering Committee, a joint committee formed by the towns of New Durham and Alton of which the commenter was a part, has been committed to the collection and analysis of water quality data on the Merrymeeting River and downstream ponds. EPA thanks the Committee for the extensive water quality sampling efforts, which have informed the development of the Draft Permit and the decisions on the Final Permit documented in this Response to Comments.

The effluent from Powder Mill State Fish Hatchery (PMSFH) has caused or contributed to excursions of water quality standards in the Merrymeeting River (MMR) and downstream ponds, including Marsh, Jones and Downing Ponds. In particular, the discharge of total phosphorus (TP) from the hatchery has contributed to the impairments of the primary contact recreation designated use due to cyanobacteria hepatotoxins microcystins. The 2019 Fact Sheet explains that the discharge of phosphorus from PMSFH has caused the Merrymeeting River and downstream waterbodies to experience severe degradation. The 2019 Fact Sheet (p. 25) states:

> The cold, high-quality source water from the Merrymeeting Lake is low in TP (0.006 mg/L or less) and the effluent discharged from the hatchery outfalls is, on average, about 0.05 mg/L (Appendix A), which is a substantial increase from the intake concentration. In addition, the flow from Merrymeeting Lake forms the headwaters of the Merrymeeting River. Much of this flow is routed through the hatchery (with the exception of spring and fall lake drawdown) and during summer all of the flow to the Merrymeeting River is from the hatchery. See 2019 Merrymeeting River & Lake Watershed Plan Figure 3-8 (at 33). The hatchery is the largest contributor of phosphorus to the system, which is experiencing severe water quality impairments related to excessive phosphorus loading. For these reasons, EPA has determined that the addition of phosphorus from the hatchery to the impaired waterbody has the reasonable potential to cause or contribute to an in-stream excursion above the narrative criteria discussed above. *See* 40 C.F.R. § 122.44(d)(1)(ii).

The discharge of phosphorus from the hatchery is clearly causing or contributing to the degradation of water quality downstream. EPA established a numeric effluent limitation for total phosphorus in the Draft Permit to address the discharge of nutrients and, therefore, the impairment to the primary contact recreation designated use in Marsh, Jones, and Downing Ponds.

1. Wastewater Treatment Systems

I would like to begin my comments by discussing an issue rarely mentioned in the draft permit, the function of the previously used settling ponds to remove solids and associated nutrients from the discharge. These ponds were previously developed to grow black bass for stocking and have gravel bottoms. The relatively large size coupled with the gravel bottoms made these ponds extremely difficult to properly clean. The residents on New Durham repeatedly wrote to the EPA

expressing their concerns regarding the ability of these ponds to remove solids. They saw many years when no solids were removed from the ponds and deposited on-site on agricultural lands as cited in the Best Management Practices Plan. Yet, despite the lack of cleaning, the bottom of the ponds generally remained pretty clean. There was no other conclusion then to assume that most to [sic] the solids captured in the ponds were eventually going into the discharge. The enormous number of pounds per year of nutrients and suspended solids seen in Table VI-1 is a testimony to this. The only year I watch the cleaning process from beginning to end, 2017, I could see how incredibly difficult this process was and how many man-days of work it took to complete the process a single time. With the new temporary waste water treatment system (NTWWTS) in place I look forward to never seeing the old settling ponds going back into service and I think that an emergency plan, to be imposed should the new temporary system fail, should be developed immediately. The EPA should require such an alternative plan be drafted within the first year of this permit and not include re-establishment of the old gravel bass ponds as settling ponds.

Table VI-1. EPA Echo Pollutant Loading Report for the Powder Mill State Fish Hatchery (2015 through 2018) (adapted from Table 1 attached to comments)

	Test Analyte (pounds per year)		
	Total Phosphorus	Total Nitrogen	Total Suspended Solids
2015	583	15428	36128
2016	688	19865	47243
2017	983	19963	33781
2018	1354	16261	43680

A new temporary wastewater treatment system (NTWWTS) was completed and placed into operation in August 2019. This is an entirely experimental system. While some components of this system have been tested by others under different circumstances, never has a system exactly like this system, in terms or designed and operation, been evaluated before. The long-term functionality of this new system is unknown. It is being evaluated now under a challenging environment where the ground is frozen at least three months a year and the outside environmental temperature is frequently below freezing. Keeping this in mind, I have the following comments:

I assume that the PMSFH communicated with the EPA when it decided to develop a new solids disposal facility to replace the settling ponds. Furthermore, I assume that during those discussions a program was developed which would allow the EPA to assess the capacity of this new system to safely dispose of the nutrients and TSS contained in the cleaning water introduced into this system. Would you please include in the Fact Sheet (somewhere around page 13) the testing protocol used to evaluate the new system and the outcome of these tests. I would like to know how the daily capacity of introduced cleaning water was determined. And I am particularly interested in how system failure will be documented and what will be done in the event the system failure.

The NTWWTS was never designed to be a permanent system and is completely dependent on waste absorbed onto wood chips, which may be removed when saturated, and the ground under

these chips. Any failure of this system could lead to contamination of a nearby stream, on hatchery property, which leads directly to the Merrymeeting River at Marsh Pond. In addition, this NTWWTS only accepts vacuumed solid waste from raceways and circular tanks leaving all remaining discharge water untreated. Since it was only meant to improve upon the settling pond system until the New Permanent Waste Water Treatment System (NPWWTS) is built, evaluating this system as a permanent replacement, regardless of its efficacy, will not be accepted by the community.

Of special note here is the description of solids disposal in current operation at PMSFH. Page 13 of the Fact Sheet refers to the new temporary system as wastewater storage ponds in paragraph 1 and settling tanks in paragraph 2 and solids treatment tanks on page 43 but in no instance does this system, in its current approved use, produce decant water. Yet in the Draft Permit page 12 states "the discharges of any decant water that accumulates above those solids and of any water that flows slowly over those solids is allowed". Clearly something is out of order here. If this NTWWTF produces decant water it is running across the ground towards the river we are trying to protect. But perhaps more disturbing to me is that this statement may have been left in the Draft Permit to allow the old settling ponds to be reinstated at a later date.

EPA Response

The comment describes the operation of the former and current settling ponds and offers several critiques of both. The 2011 Permit and the 2019 Draft Permit both prohibit the direct discharge of cleaning water (water containing settled solids that have accumulated on the bottom of raceways, ponds, or tanks) absent some form of solids removal, but neither permit directs the PMSFH to use any specific technology to treat its effluent. EPA agrees with the commenter that discharges from the hatchery, particularly the discharge of phosphorus, have caused or contributed to degradation of the water quality in the downstream waterbodies. *See* 2019 Fact Sheet p. 25 and Responses to Comments III.2.1 and VI.2. The Draft Permit proposes effluent limits to meet water quality standards and address the impairment to the primary contact recreation designated use.

The comment raises concerns about the long-term functionality of the temporary settling system ("interim system") the hatchery installed in 2019. While the interim system has not been evaluated for long-term efficacy, it is EPA's understanding that this technology is not intended for long-term use and will not achieve compliance with either the Draft TP limits or the more stringent TP limits established in the Final Permit. DMR data submitted since the interim system was initiated confirms that TP concentrations remain above the proposed and final TP limits (ranging from 21 to 40 µg/L). As the comment states, the interim system is not a permanent treatment solution because it only settles the solids and water removed with the vacuum truck during cleaning and does not treat the full flow of the effluent. In its comments on the Draft Permit, NHF&G clearly intends to pursue the design of a new wastewater treatment system. *See* Comment V. *See also* AR-92. The hatchery will require operational and design changes to meet the limits in the Final Permit and will likely evaluate a range of possible treatment technologies. EPA expects that PMSFH will evaluate the long-term functionality of any treatment technology it plans to install to meet effluent limitations.

The commenter requests that Fact Sheet include a description of the testing protocol used to evaluate the new system and the results of the tests, and asks that EPA explain how the daily capacity of introduced cleaning water was determined, how system failure will be documented, and what will be done in the event of system failure. The Fact Sheet sets forth the basis for the Draft Permit and is not revised for the Final Permit. Instead, this Response to Comments explains the basis for any changes between the Draft and Final Permits. The commenter assumes that PMSFH communicated with the EPA when it decided to develop the interim system and that a program was developed which would allow the EPA to assess the capacity of this new system with respect to the discharge of nutrients and TSS in the cleaning water. EPA was not involved in the design or installation of the interim system, nor was the Permittee required to consult with EPA on any changes related to the settling ponds at the hatchery under the 2011 Permit (with the exception of reportable failures in its wastewater treatment system). The Permittee updated its Best Management Practices Plan with a description of the interim system consistent with the requirements of the 2011 Permit. As explained above, based on DMR data, the interim system will not achieve compliance with the Final Permit's TP limits. *See also* Response to Comment XXI. The comment also raises concerns about failure of the interim system. Under Part II.B.1 of the Final Permit, the Permittee must properly operate and maintain all facilities and systems of treatment and control, which would include interim systems for solids control. Back-up or auxiliary systems are required when the operation is necessary to achieve compliance with conditions of the permit. EPA has also revised Part I.C.2.a.1.iii to include reporting requirements pertaining to material removed from any treatment technology, in addition to the rearing units and/or settling tanks. This requirement would be applied equally to an interim or permanent system. See also Response to Comment XXI.

EPA has determined that the promulgated technology-based limits for concentrated aquatic animal production facilities (40 CFR Part 451) are not sufficient to ensure that certain of the state's water quality standards are met in accordance with 40 CFR § 122.44(d). The NPDES Permit establishes water quality-based TP limitations to address the impairments in the downstream waterbodies and to ensure that the effluent meets water quality standards. As explained above, the interim system, which treats only the vacuumed solid waste from raceways and tanks, leaves the remaining effluent untreated and cannot stand as the permanent replacement for a solids treatment system to meet the Final Permit's TP limits based on reported data. In issuing NPDES permits, EPA requires compliance with effluent limits, but must "allow the permittee to choose its own control strategy." *Am. Iron & Steel Inst. v. E.P.A.*, 115 F.3d 979, 996 (D.C. Cir. 1997). In this case, the Permittee will select the most appropriate treatment system and/or operational changes to meet the water quality-based permit limits. The PMSFH may choose to include the Town of New Durham and the Cyanobacteria Steering Committee in its evaluation of various treatment technologies. Because the ultimate solution is unknown, it is premature to include certain conditions in the Final Permit that could inhibit the Facility's design of a permanent treatment solution (e.g., prohibit the use of the bass ponds if they may be part of a wholly re-designed system). In response to comments on the Draft Permit, EPA has determined in its discretion to not include a compliance schedule in this permit and expects to include a schedule for completing necessary treatment/design upgrades in an administrative order, which will include appropriate interim planning/design/construction milestones. *See* CWA Section 309(a). See Responses to Comments III.7.1 and VI.5.

Finally, the commenter expresses concern that statement in the Draft Permit at page 12 states "the discharges of any decant water that accumulates above those solids and of any water that flows slowly over those solids is allowed" will either allow the Permittee to discharge water from the interim treatment across the ground towards the river or was purposely included to allow the "old" settling ponds to be reinstated at a later date. EPA carried the prohibition of the direct discharge of cleaning water directly from the 2011 Permit (Part I.A.9). The language at issue allows for the discharge of "decant" water (i.e., clarified water that accumulates above settled solids or flows slowly over the solids so as not to disturb them) from a settling tank, empty raceway, and/or clarifier used for the purposes of settling solids. The Permittee cannot meet the final TP limitations simply by reverting back to using the bass ponds for settling because they did not meet the limits when the bass ponds were in use. The only way the Permittee will meet the water quality-based limits in the Permit is to dramatically change operations and/or wastewater treatment at the hatchery. EPA has elected to establish a water quality-based limit in the Final Permit because this limit is scientifically justified and consistent with methods used by NHDES to establish limitations on nutrient loading to address cyanobacteria impairments in area lakes. The Clean Water Act provides some level of flexibility for the permittees to design the optimal treatment system based on site-specific factors best understood by the facility operators in order to meet WQBELs. In the interim, as explained above, EPA expects to address compliance through an Administrative Order, which will include interim limits requiring incremental reductions in TP and which are unlikely to be met by reverting back to settling using the bass ponds in the same manner as they were used in the past. *See* Response to Comment VI.5.

2. Total Phosphorus Effluent Limitation

Stakeholders interested in improving the water quality of the Merrymeeting River have met and developed water quality goals for the river. Included among this group was a representative from the NHDES. A maximum of 10 ug/L total phosphorus (TP) monthly average for each month of the year, throughout the river was unanimously approved by this group. This maximum was selected in an effort to return the river to mesotrophic status, to prevent further cyanobacterial blooms, and to diminish the current phosphorus pollution to Lake Winnipesaukee. The process began by taking the NH DES' in-lake concentration for total phosphorus (TP) in mesotrophic lakes of 12 ug/L. Next, we applied the recommended 10% margin of safety bringing the final value to 10.8 ug/L. After deliberations the group selected a maximum of 10 ug/L which was consistent with the EPA's Ecoregional Nutrient Criteria for Ecoregion VIII (our area). The Ecoregional Criteria represent conditions in waters within ecoregions that are minimally impacted by human activities (Fact Sheet page 27). The MMWMP clearly shows that if the hatchery were removed today the in-lake concentration of TP in Marsh Pond would be 6.2 ug/L, consistent with being minimally impacted (page 31).

The Draft Permit never mentions Lake Winnipesaukee which is the ultimate receiving waterbody of pollutants from the Merrymeeting River. Instead the Draft Permit concentrates on the waterbody which is immediately downstream from the hatchery, Marsh Pond. The Draft Permit sets a upper limit for TP discharge from the PMSFH of 14 ug/L from June – September and of 25 ug/L for October-May. This allows a maximum load of 87 lbs. during the summer months and

another 308 lbs./ from October- May for a total of 395 lbs./y TP (Draft Permit page 8). I have the following observations:

1) The proposed summer month limit of 14 ug/L TP is unlikely to prevent cyanobacteria blooms. During the summer all the water in the Merrymeeting River goes through the hatchery. If 14 ug/L is allowed to flow from the hatchery then the concentration in Marsh Pond will also be at least 14 ug/L and this does not take into consideration the 13.2 lbs./summer from internal loading. According to NH DES criteria this in-lake concentration would be considered impaired.
2) The combined maxima of 14/25 ug/L over the course of the year are unlikely to prevent cyanobacteria blooms or remove Marsh Pond from its current impaired status considering contributions non-point sources (145lbs./y) and internal loading (13.2 lbs./y) in Marsh Pond (Merrymeeting Watershed Management Plan p. 28). While we have begun to correct the discharges due to stormwater runoff into this area via direct town funds for remediation of the town boat access on Marsh Pond, and application for section 319 funds to remediate the stormwater runoff at Merrymeeting Road Bridge at South Shore Road; it is estimated that after these are corrected another 6 mainly pristine streams will continue to discharge 138 lbs./y TP. Only further limitations will likely prevent cyanobacteria blooms despite your assertion that this limit will produce an algal bloom probability of 0.2% as found on page 28 of the Fact Sheet.
3) The NH DES' 12 ug/L limit for mesotrophic lakes was based on a relationship between chlorophyll-a and TP and may not substantially reduce the risk of cyanobacteria blooms in the same way as algal blooms.
4) The net increase of TP load by 208 lbs./y over the proposal put forward in the Merrymeeting Watershed Management plan and as proposed by the Water Quality Goals Committee will make meeting all the rest of the downstream water quality goals nearly impossible.
5) The inability of the community to meet these water quality goals in the future may have a negative impact on securing funds to correct non-point sources of pollution
6) The Draft Recommendations allow for an additional 208 lbs./y to eventually enter Lake Winnipesaukee.

EPA Response

As explained in the 2019 Fact Sheet (p. 25) and again in this Response to Comments, the discharge of total phosphorus (TP) from the PMSFH is causing or contributing to an excursion of narrative water quality standards and the impairment of primary contact recreation designated use due to the presence of cyanobacteria. A cyanobacteria bloom was recently spotted in Marsh and Jones Ponds in July 2020.[5] The Draft Permit proposes numeric TP limits to address the impairment and ensure that the discharge meets water quality standards. The comment raises concerns that the Draft Permit's TP limits are not adequate to meet water quality standards and address the impairments due to cyanobacterial blooms. The comment asserts that the permit should include a TP limit of 10 µg/L consistent with the value recommended in the 2019 WMP.

[5] Cyanobacteria Advisories are posted on the NHDES website at https://www4.des.state.nh.us/WaterShed_BeachMaps/. Visited on August 11, 2020.

Neither the 2019 WMP or the comment explain why a TP limit of 10 µg/L is necessary to meet water quality standards consistent with the CWA. According to the comment, the 2019 WMP started with a target value of 12 µg/L as the starting point in deriving its own recommended water quality target for the Merrymeeting River watershed. An in-lake concentration of 12 µg/L is consistent with the approach that NHDES takes when deriving TMDLs for acceptable nutrient loads for lakes in New Hampshire listed as impaired due to total phosphorus, chl-a, and cyanobacteria hepatotoxic microcystins. The recommended TP value of 10 µg/L in the 2019 WMP was calculated by subtracting a 10% margin of safety from a target of 12 µg/L, which equals 10.8 µg/L. The stakeholder group then decided to choose the slightly more stringent ecoregional nutrient criteria value of 10 µg/L (for Ecoregion VIII), which the comment points out represents conditions that are minimally impacted by human activities.[6] However, EPA is establishing an effluent limitation for TP because the discharge from the hatchery is causing or contributing to an excursion of water quality standards in the receiving water. EPA is not developing a TMDL for TP in Marsh Pond and the numeric TP limit should not be treated as such. As explained elsewhere in these Responses to Comments, the New Hampshire surface water quality standard for nutrients is narrative and the numeric effluent limitations in the Final Permit represents EPA's translation of this narrative standard with an appropriate margin of safety. *See* Response to Comment III.2.1. EPA explains in detail below why the Final Permit's numeric TP limit, which is substantially more stringent that the limits proposed in the Draft Permit, will meet water quality standards.

The comment states that the NHDES in-lake target TP concentration of 12 µg/L for mesotrophic lakes was "based on a relationship between chlorophyll-a and TP and may not substantially reduce the risk of cyanobacteria blooms in the same way as algal blooms." The numeric TP target value is not based on any single criteria but a "weight of evidence" approach considering several factors, including examination of the distribution of TP concentrations in impaired and unimpaired lakes in New Hampshire, use of nutrient levels for commonly-accepted trophic levels, and use of probabilistic equations to establish targets to reduce risk of adverse conditions (e.g., cyanobacteria blooms). *See* AR-7 p. A-10. According to NHDES, a lake is listed as not supporting primary contact recreation if cyanobacteria scums are present and reduction of TP loading will reduce the likelihood of scum formation. TP estimates derived in the LLRM to achieve an in-lake annual mean concentration of 12 µg/L are used to predict annual mean chl a and SDT based on a set of empirical equations, and bloom frequency is calculated based on equations developed by Walker using a natural log mean chl a standard deviation of 0.5. Because cyanobacteria contain chl-a, predicting the occurrence of blooms based on mean chl-a levels is equally applicable to cyanobacteria as to other algal blooms. The numeric TP target values are derived to be both protective of designated uses and correspond to lake conditions under which chl-a, the presence of cyanobacteria scums, and dissolved oxygen assessment criteria are met. *See id.* p. A-3. A-10. The "weight of evidence" demonstrates that 12 µg/L will support

[6] The Agency recently issued Draft Updated Ambient Water Quality Criteria Recommendations for Lakes and Reservoirs of the Conterminous United States: Information Supporting the Development of Numeric Nutrient Criteria. 85 Fed. Reg. 31184 (May 22, 2020). Following consideration of the comments, EPA intends to revise and publish a final document that will incorporate new data and models intended to replace the recommended numeric nutrient criteria of 2000 and 2001.
https://www.epa.gov/nutrient-policy-data/technical-support-numeric-nutrient-water-quality-criteria-development

recreational and aquatic life designated uses as reflected in suitable (designated use support) measures of both SDT and chl a.

The comment indicates that the Draft Permit's seasonally-based TP limits of 25 µg/L from October through May and 14 ug/L from June through September are unlikely to prevent cyanobacteria blooms or remove Marsh Pond from its current impaired status. The comment also raises concerns that the net increase of TP load by 208 lbs per year under the Draft Permit as compared to the proposal put forward by the Water Quality Goals Committee and proposed in the Merrymeeting Watershed Management plan (based on an end-of-pipe TP concentration of 10 µg/L) will make meeting all the rest of the downstream water quality goals "nearly impossible." EPA reviewed the basis for the Draft Permit TP limits and re-evaluated whether these TP limits are likely to meet water quality standards, including the requirement that "all surface waters shall be restored to meet the water quality criteria for their designated classification, including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters." Env-Wq 1703.01(b). For the Final Permit, EPA used a "weight of evidence" approach considering the best available scientific information for establishing numeric TP limitations to address the water quality impairments in Marsh Pond and the downstream waters, including:

- Consistent with NHDES's approach to classifying and restoring mesotrophic lakes, a numeric TP limit of 12 µg/L will reduce the likelihood of cyanobacteria scum formation and support primary contact recreation;
- Predicted in-stream TP and chl-a concentrations based on the LLRM developed for the 2019 WMP and the supporting data;
- The recommended water quality goals in the 2019 WMP;
- EPA's recommended ecoregional nutrient criteria for lakes and ponds representing the best, most attainable, most natural condition of the resource base;
- Ambient water quality data collected by EPA, NHDES, and the Merrymeeting Cyanobacteria Steering Committee; and
- Effluent water quality data collected by the PMSFH.

In the Draft Permit, EPA used the LLRM developed for the 2019 WMP to develop TP limits to address the impairment for primary contact recreation and meet narrative water quality standards at Env-Wq 1703.03 and 1703.14. *See* 2019 Fact Sheet p. 71-75. EPA used the LLRM to establish a water quality-based effluent limit for an indicator pollutant, TP, at the two hatchery outfalls at levels that are predicted to achieve narrative water quality standards and meet the primary contact recreation designated use in Marsh Pond. *See* 40 C.F.R. § 122.44(d)(1)(vi). EPA also evaluated the change in the hatchery's contribution on the response variable (chlorophyll-a) and probability of algal blooms using the model. The LLRM predicted that an in-lake target of 12 µg/L would be met with an annual TP load of 465 lbs (212 kg) from the hatchery. This target annual load is based on an effluent TP concentration of 25 µg/L and is calculated on an annual average basis. EPA then applied an additional, explicit 15% margin of safety (MOS) (i.e., in addition to the implicit 20% MOS of the LLRM) to the annual target load and required that the reduction from the MOS be applied during the summer growing season when cyanobacteria blooms occur.

As the commenter points out, all the water that flows from Merrymeeting Lake to the Merrymeeting River during the summer goes through the hatchery. The LLRM (spreadsheet "MML-OUT") predicts a negative flow from the lake (i.e., through the hatchery) during the months of June through September. With no dilution from the Merrymeeting Lake, an end-of-pipe limit of 14 µg/L must rely on dilution in Marsh Pond to meet an in-lake target concentration of 12 µg/L. According to the LLRM, Marsh Pond and the downstream impoundments resemble a riverine system due to the high flushing rate (e.g., Marsh Pond flushes about 54 times per year). During the summer, with only flow from the hatchery to Marsh Pond (at an average flow of 6.2 MGD), the volume of the lake (522,795 m3) would turn over about once per month and, without any additional flow from the Merrymeeting Lake (i.e., all flow to the river consists of hatchery effluent), the summer in-lake TP concentration would be expected to be similar to the level discharged from the hatchery. The LLRM for Marsh Pond predicts an in-lake TP concentration of 12 µg/L at an effluent concentration of 25 µg/L on an annual average basis but likely does not adequately account for the unique, seasonal conditions in the Merrymeeting River (i.e., no dilution of the hatchery discharge occurs). Given the severity of the phosphorus-related impairments in the receiving water and downstream, the absence of any dilution of the effluent from the hatchery during the summer, and the unique circumstances of the entire incoming flow to Marsh Pond coming from the hatchery, EPA agrees with the comment that a more conservative TP limit than was proposed in the Draft Permit is warranted. For this reason, the Final Permit establishes a concentration-based TP limit of 12 µg/L at Outfalls 001 and 002 when there is no dilution from Merrymeeting Lake (June through September). This more conservative limit will ensure that the in-lake target TP concentration derived to be protective of aquatic life and cyanobacteria designated uses is met.

In response to this and other comments on the Draft Permit, EPA and NHDES re-evaluated the LLRM and its applicability for setting an end-of-pipe TP limitation for the non-growing seasons. The LLRM Marsh Pond output using the inputs as presented in the Merrymeeting River & Lake LLRM Report (AR-27) predicts an annual average TP concentration of 18 µg/L (based on the mass balance equation) as compared to an observed value of 17.7 µg/L. First, based on review of quarterly DMR data, the LLRM may underestimate the TP output from the hatchery, particularly when the December 2018 data is included. See Response to Comment VI.7.2. Second, the observed annual average TP concentration was derived from flow-weighted summer epilimnion data and TP for months in which no sampling was completed (December through March) was based on the relationship from a single, winter sample in Downing Pond and may underestimate true winter TP concentrations. *See* Responses to Comments VI.3, VI.7.1. Additional TP sampling data (referenced in the comment) collected as part of the University of New Hampshire Lay Lakes Monitoring Program (*see*, *e.g.*, AR-86) was submitted by the commenter after the close of the comment period. Because sampling was ongoing at the time of the public notice period, is consistent with the methodology and protocols used to collect data used in the LLRM, and is central to the issues raised in the comment, EPA is considering this data for the Final Permit. *See* AR-94. This data suggests that the LLRM may underestimate observed annual mean TP because it underrepresents winter TP concentrations. *See* Response to Comment VI.3. While non-summer sampling data remains limited, the available data suggests that the LLRM assumptions may not be appropriate for this system.

EPA has determined it should be additionally conservative with use of the LLRM model because, as described above, the Merrymeeting watershed does not conform to the same pattern as other New Hampshire lakes, in which summer TP tends to be lower than the non-growing season. The observed average TP concentrations in Marsh Pond in June through September 2017 and 2018 were more than double average April value. Moreover, Marsh Pond metalimnion TP and chl-a concentrations in summer were substantially higher than either the epilimnion or surface grab data, suggesting that there is an active algal community at depth that may be supported by internal loading as well as direct TP concentrations during the summer. *See* AR-27 p. 9. In addition, as the LLRM Report points out and NHDES has confirmed in coordinating with EPA, empirical formulas used in the model are at their near practical application limit for highly flushed, riverine systems like Marsh, Jones, and Downing Ponds. *See id*. p. 11. In all, there is considerable uncertainty that the LLRM for Marsh Pond adequately captures the influence of factors unique to this system (e.g., internal loading and the constant, direct TP load from the hatchery, summer and winter ambient TP values, relatively high flushing rate, limited bathymetry data) on downstream TP concentrations to accurately predict in-lake TP on an annual average basis for the purposes of establishing an effluent limitation. EPA determined that in this case, given the unique circumstances of the system, the severity of the water quality impairments, and because the PMSFH is indisputably the primary source of TP loading to the Merrymeeting River, it is reasonable to establish a year-round effluent limitation of 12 µg/L to ensure that the effluent is consistent with the in-lake target TP concentration derived to be protective of aquatic life and cyanobacteria designated uses.

A year-round, TP limit of 12 µg/L will ensure that the effluent will meet an in-lake target TP concentration. In fact, the TP downstream of the hatchery may, at times, be even less than 12 µg/L when flow over the Merrymeeting Lake Dam is present. During the non-summer months, flow from the Merrymeeting Lake overtops the dam, which combines with Outfall 001, travels downstream and combines with Outfall 002, and then flows into Marsh Pond. *See* AR-27 p. 8. A simple mass-balance equation is used to estimate the downstream concentration of a pollutant based on the upstream flow and concentration and effluent flow and concentration. *See* 2019 Fact Sheet p. 30-31. *See also* AR-95 p. 6-24. EPA calculated the expected TP concentration downstream of the outfalls using flow from Merrymeeting Lake based on the estimates of lake output (in cubic feet per second (cfs)) in the LLRM ("MML-OUT"), a lake TP concentration of 6 µg/L, an effluent TP concentration of 12 µg/L, and the average monthly permitted flow (2.0 MGD at Outfall 001 and 4.2 MGD at Outfall 002). To estimate the concentration downstream of Outfall 002, EPA used upstream inputs based on the estimated concentration downstream of Outfall 001 and combined flow from the lake plus Outfall 001. The results of this analysis are presented in Table VI-2, below.

Table VI-2. Estimated monthly average TP concentration downstream of Outfall 001 and Outfall 002 based on monthly outflow from the Merrymeeting Lake (flows obtained from the MMR LLRM Marsh Output) and effluent TP concentration-based limit of 12 µg/L.

	Outflow from MML	Downstream TP Concentration @ Permitted Average Monthly Flow	
		Outfall 001	Outfall 002
	cfs	µg/L	µg/L
Jan	21.13	6.8	7.9
Feb	18.05	6.9	8.1
Mar	21.52	6.8	7.8
Apr	3.47	8.8	10.4
May	9.78	7.4	9.0
Oct	44.67	6.4	7.1
Nov	24.13	6.7	7.7
Dec	24.94	6.7	7.7

At an effluent TP concentration of 12 µg/L, based on the estimated flow from the Merrymeeting Lake in the LLRM, the TP concentration downstream of Outfall 002 in the non-growing season is expected to be about 10 µg/L or less. A year-round effluent limit of 12 µg/L will ensure that the TP concentration in Marsh Pond will be at or below a target in-lake concentration consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* AR-80 p. 65.

The Final Permit's year-round, water quality-based TP limits of 12 µg/L result in an estimated, annual average in-lake TP concentration of 9.5 µg/L, which will ensure that TP concentrations in Marsh Pond are protective of the designated uses consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* AR-80 p. 65. In fact, on an average annual basis the more conservative Final Permit limits are estimated to be consistent with the more stringent in-lake TP concentration recommended in the comments and in the 2019 WMP. The annual TP load based on the Final Permit's concentration-based limits is 227 pounds TP per year, with 75.7 pounds of TP discharged during the growing season (June through September). This load is a 76% reduction from the estimated current load based on DMR data (953 pounds) and a 73% reduction from the load estimated in the LLRM (833 pounds). The Final Permit limits also represent an additional 43% reduction as compared to the limits proposed in the Draft Permit. The LLRM for Marsh Pond using the total estimated annual load at each outfall based on the Final Permit limits predicts an annual average in-lake TP concentration of 8 µg/L and a mean chl-a concentration of 2.6 µg/L. These values are consistent with the target thresholds set by NHDES for the best possible water quality in mesotrophic lakes. *See* AR-80 p. 36. The TP value is also consistent with the Ecoregion VIII reference condition for rivers and streams used as the basis for setting water quality goals in the 2019 WMP, according to the comment. The probability that chl-a exceeds 10 µg/L (which is less than the target of 15 µg/L that NHDES uses to assess impairment of the primary contact recreation designated use) is 0.2%. EPA believes that the conservative, water quality-based TP limits in the Final Permit, which will result in a 76% reduction in TP loading to Marsh Pond, will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. At the same time, the LLRM Report (AR-27 p. 14) notes that internal loading is a concern in Marsh and Jones Dam Ponds. Addressing the internal load of these ponds

would best be addressed with a holistic, watershed management approach and is beyond the scope of the NPDES permit. *See also* Response to Comment IX.

The comment raises concerns that the net increase of TP load by 208 lbs per year under the Draft Permit as compared to the proposal put forward by the Water Quality Goals Committee and proposed in the Merrymeeting Watershed Management plan (based on an end-of-pipe TP concentration of 10 µg/L) will make meeting all the rest of the downstream water quality goals "nearly impossible." NPDES permits must include effluent limits in addition to or more stringent than promulgated effluent limitations guidelines necessary to achieve water quality standards established under section 303 of the CWA, including narrative criteria for water quality. 40 CFR § 122.44(d), (d)(1). The TP limits in the Final Permit are established to meet New Hampshire water quality standards, including the protection of designation of uses and narrative water quality criteria. Env-Wq 1703.01(b) and (c), 1703.03(c)(1), 1703.07(b), 1703.12(b), 1703.14(b), and 1703.19. Neither the comment nor the WMP explain why an end-of-pipe TP limit or in-lake TP concentration of 10 µg/L is necessary to meet the applicable water quality standards. However, the Final Permit's year-round, water quality-based TP limits of 12 µg/L are expected to achieve an in-lake annual average TP concentration of 10 µg/L.

As the commenter points out, EPA focused on the hatchery TP load and resulting in-lake TP concentration in Marsh Pond, which is the first lake downstream of the hatchery. The estimated total annual load of 227 pounds (a 76% reduction) is generally consistent with the 2019 WMP's water quality objective to reduce phosphorus loading from the PMFSH by 78%. According to the LLRM Report and 2019 WMP, most of the TP load to Jones and Downing Ponds originates in Marsh Pond. *See* AR-27, AR-81. The Final Permit's TP limits ensure that the effluent from the hatchery will not cause or contribute to an excursion of water quality standards in the receiving water (Marsh Pond) or the downstream waterbodies. EPA expects, and the LLRM predicts, that addressing the TP discharge from the hatchery will improve conditions in Marsh Pond, result in similar improvements in Jones and Downing Ponds, and will address contributions from the hatchery to Lake Winnipesaukee, which the 2019 Fact Sheet (p. 14) identifies as the ultimate receiving water. The comment does not explain why EPA should not have focused on the impacts from the hatchery to the immediate receiving water (Marsh Pond), where the direct contribution from the hatchery will result in the greatest impacts on the waterbody. As the 2019 WMP and the LLRM both indicate, the hatchery is the only point source in the watershed and the primary contributor of TP. The Final Permit limits the addition of TP to the receiving water. As such, the downstream waters, including Lake Winnipesaukee, will benefit from the 76% reduction in TP from the hatchery.

3. Total Phosphorus Sampling

The EPA received a copy of the models used in the development of the Merrymeeting Watershed Management Plan (MMWMP) and performed certain analyses of their own in order to arrive at a phosphorus limit from the PMSFH. To the extent that the MMWMP was used by the EPA for guidance the following is an important consideration. The Lake Loading Response Model Report (April 2019) detailed limitations to the model (page 11-this is a separate document from the MMWMP). "Most data were collected from April to November and had to be flow weighted to estimate an annual summary statistic for model calibration. Estimates were used for missing

months (December through March) and calculated as 40% lower than November values (based on observed data from Downing Pond, that showed an average concentration of 16 ppb in November and 10 ppb in January)". My research indicates a single November sample was taken in 2017 (none before or after) which has a value of 19 ppb , while the single January value of 10 ppb was taken from the NH DES Trophic Data Survey of Downing Pond taken on January 22, 2004 (NH DES Trophic Data, Downing Pond, New Durham, NH, 2004). I am assuming that the November value of 19 ppb was actually 16 after it was flow weighted. It is interesting that the July 2003 sample taken and reported in the Trophic Data Report on Downing Pond was not used especially since it was 43ppb! Downing Pond is approximately 2 miles from the PMSFH and there are many tributaries contributing water entering Downing Pond which could dilute the phosphorus levels arising from Marsh Pond during the winter. No recent Trophic Data exist from any portion of the Merrymeeting River. However, a survey was conducted on Marsh Pond and Jones Pond in the 1986/87 years which compared July and January sampling dates in both ponds. The Marsh Pond survey conducted on July 3,1986 and Jan 26,1987 at 1 Meter depth showed TP of 42 ppb in July and 33 ppb in January, for a 21% reduction in phosphorus concentration in the winter. In Jones Pond, sampled on exactly the same dates, the values were 33 ppb in July and 32ppb in January for a 3% reduction (NH DES Lake Trophic Data, Marsh Pond, Alton, NH, 1987; NH DES Lake Trophic Data, Jones Pond, New Durham, NH, 1987). These effects due to winter dilution of phosphorus are not nearly the 40% used to calibrate the model. And these sampling sites are much closer to the PMSFH discharge point. I think it is noteworthy that the authors of the Lake Loading Response Model Report specifically state: "Collecting samples under a variety of flow conditions, in all seasons, and across several years can help to reduce the models uncertainty and help to inform assumptions on standard water yield, export coefficients, an attenuation factors used".

Realizing this deficiency, the Cyanobacteria Mitigation Steering Committee's River Water Quality Working Group decided to sample multiple sites throughout the river throughout the year (once monthly). In addition, stream gauges were set up at four locations, each free from the limitations of impoundments, so that reliable phosphorus loads could be calculated for 12 months. These data will be available by March 15, 2020. The EPA may want to review its methodology and make modifications to the phosphorus limits as necessary.

EPA Response

The comment raises some concerns about the limitations of the LLRM model that EPA used to develop the TP effluent limitations in the Draft Permit, notably that ambient TP data was typically limited to samples collected in April through November and the estimated winter data may not be representative of typical conditions.

The calculation of annual mean TP in Marsh Pond in the LLRM is presented in the "WQ-TP" tab. *See* AR-96. The annual mean TP was estimated from epilimnion and surface grab data collected at the Marsh Pond Deep site during the months of April through November. As the commenter points out, the LLRM estimated the average TP for December through March because there was no sampling data available for these months. The modelers observed a 40% decrease in TP from samples collected in November and January in Downing Pond. Using this limited data, the estimate for TP in January through March on this observation (i.e., the value for each month (8.9 µg/L) was calculated as the mean November value (14.9 µg/L) adjusted by 40%

(14.9 * 0.4 = 6.0). The comment suggests that the 40% reduction is based on a Downing Pond sample from November 2017 (at a value of 19 µg/L) was flow-weighted (to a value of 16 µg/L) and compared to a single January value of 10 µg/L (from a 2004 NHDES Trophic Data Survey. The LLRM Model 4 (Downing Pond) "WQ-TP" spreadsheet indicates that the 40% reduction was based on a comparison of a single, epilimnion TP value of 16 µg/L taken on 11/6/18 to a single, epilimnion TP value of 10 µg/L on 1/22/2004. *See* AR-97.

The comment suggests that the adjustment is based on limited data and that winter data collected in Marsh and Jones Pond sites in 1986 and 1987 do not support a 40% reduction, but something much lower (e.g., 3-21%). Additional TP sampling data (referenced in the comment) collected as part of the University of New Hampshire Lay Lakes Monitoring Program (*see*, *e.g.*, AR-86) was submitted by the commenter after the close of the comment period. Because sampling was ongoing at the time of the public notice period, is consistent with the methodology and protocols used to collect data used in the LLRM, and is central to the issues raised in the comment, EPA is considering this data for the Final Permit. *See* AR-94. Table VI-2 compares the estimated winter TP concentrations in the Marsh Pond LLRM with the ambient data sampled during winter 2019-2020.

Table VI-2. Estimated winter (December through March) TP concentration in the Marsh Pond LLRM compared to ambient winter data collected at the Marsh Pond Outflow to Jones Dam Pond (at the Merrymeeting Road Bridge) by the Merrymeeting Cyanobacteria Steering Committee from December 2019 through March 2020.

	LLRM TP Estimate (µg/L)	Ambient TP Sample (µg/L)	Ambient Collection Date
December	11.9	14.6	12/9/19
January	8.9	8.3	1/6/20
February	8.9	11.0	2/3/20
March	8.9	13.3	3/9/20

The ambient data supports the argument that the LLRM may underestimate observed annual mean TP because it underrepresents winter TP concentrations. Based on this analysis, the LLRM would underestimate the annual average TP concentration in Marsh Pond by as much as 27%. *See id*. While non-summer sampling data remains limited, the available data suggests that the estimated annual mean observed TP concentration in the LLRM (17.7 µg/L) may be underestimated. The Marsh Pond LLRM predicts an in-lake TP concentration of 16.9 µg/L (as an average of the empirical models) under current conditions, but if the observed annual average is higher (as indicated by new winter ambient data), it suggests that the LLRM may underestimate the true, observed mean annual TP concentration.

In response to the comment, and Comment VI.2, above, EPA re-evaluated the assumptions and limitations the LLRM model for the purposes of establishing water quality-based effluent limits in a NPDES permit. The LLRM model includes a number of assumptions based on data collected at lakes throughout New Hampshire, including the relationship between summer and winter TP data. However, Marsh Pond and the downstream waters are unique among New Hampshire lakes due to the presence of a single, dominant point source (the PMSFH) which provides a constant

source of TP load to the river in all months. Moreover, at certain times of year, all of the flow to the Merrymeeting River passes through the hatchery. Because these unusual conditions are not well represented by the model, EPA elected to establish more conservative TP limits for the Final Permit to ensure that in-lake TP concentrations are consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* Response to Comment VI.2.

4. Total Suspended Solids and Total Nitrogen Effluent Limitations

The Draft Permit does not provide limits on the discharge of total suspended solids (TSS) and total nitrogen (TN). Draft Permit Part I.A.1 pp 2 and 4.

1) In our (Town of New Durham) initial letter to the EPA (David Webster dated September 25, 2016) we highlighted the fact that the PMSFH was releasing tremendous amounts of TP and TN and TSS and cited your statistics in the ECHO database as evidence.
2) And updated review of the NH F&G reported discharges of TP, TN and TSS as presented in the ECHO database are presented in Table 1 (attached). Complete data is presented for the years 2015-2018 for the PMSFH and a trend towards increasing phosphorus discharge is seen over time. However, perhaps just as significant is the high loads of nitrogen released (nearly 20,000 lbs./y in some years) and TSS released (nearly 50,000 lbs. in 2016 and 43680 lbs. in 2018). If this seems like a high number, that's because it is. According to Penn State University, 10,000 lbs. of nitrogen is enough to fertilize 90 acres of corn (Agronomy Facts 12:2003). PMSFH discharges are the equivalent of fertilizing the Merrymeeting River.
3) We have previously reported that releases of TP, TN and TSS are so bad in the Merrymeeting River that entire areas (Marsh and Jones ponds) are overgrown with variable milfoil, filamentous green algae and cyanobacteria and divers conducting diver assisted suction harvesting for milfoil have reported the diving conditions as hazardous. These divers have stated to the New Durham Water Quality Committee that the combination of nutrients and the nutrient-rich muck layer several feet deep on the bottom of Jones and Marsh Ponds probably resulted from the hatchery TSS and is supporting the uncontrolled growth and reproduction of milfoil. New Durham has spent over $105,000.00 over the past few years trying to control variable milfoil in these ponds downstream from the PMSFH.
4) Marsh and Jones Ponds have blooms caused by a nondiazotrophic cyanobacteria which forms metalimnetic blooms (not seen from the surface) and during the summer this species, *Planktothrix isothrix*, makes up 70-90% of the total algal biomass of the ponds (Perkins,2019). *Planktothrix isothrix* requires both TN and TP in the water for optimal growth and studies have shown that their relative abundance and toxin production are dependent on additional TN in the water (Jankowiak, et al. 2019). Experience on Lake Erie has shown that only by decreasing both TP and TN will *Planktothrix sp*. be controlled (Davis et al. 2015).
5) Yet the Draft Permit and Fact Sheet (2019) still depend on narrative effluent limitation guidelines (ELGs) for concentrated aquatic animal production based on the level of fish production to consistently achieve best practicable control technology (BPT) levels for removal of solids. The 2019 Fact Sheet (page17) states: "the combination of settling technology and feed management control practices reflect a technology demonstrated to

achieve low levels of TSS", this is not consistent with the four year total release of TSS by the PMSFH of 80 tons!

6) Page 7 of the 2019 Fact Sheet states: If the permitting authority determines that the discharge of a pollutant will cause or contribute to an excursion above the water quality standards, the permit must contain WQBELs for that pollutant. For reasons stated above the nitrogen released by the PMSFH violates the State of New Hampshire's Water Quality Standards Anti-degradation clause and thus requires a WQBEL.
7) The Fact Sheet goes on to state: "In addition the anticipated improvements that will be necessary to meet the water quality-based effluent limits for TP described above will also reduce the total nitrogen load to the Merrymeeting River". However, the Draft Permit does not instruct on the specific technology necessary to remove phosphorus so there is no way to know for sure if the current excesses in TSS and TN will be mitigated through the removal of TP. In fact, the EPA's footnote #9 in the fact sheet recognizes the superiority of waste water treatment technology based on chemical or physical treatment compared on narrative ELGs for removal of solids yet they deliberately did not specifically establish numeric TSS effluent limitations based on model technology in order to give flexibility to the permittee.
8) Draft Permit Part I.C.4. Benchmark requirements for total suspended solids (TSS). Something seems to be wrong here. The benchmark of 10 mg/L has been established by the EPA as a non-polluting level. However, the PMSFH rarely exceeds this limit (once on September 2017 it was 11 mg/L) yet the total released in the discharge per year is over 43,000 lbs. all of which seems to settle behind Jones Pond dam or at the bottom of Marsh Pond. Both ponds have deep sites which stratify in the summer. Here the muck layer on the bottom is feet deep and feeds cyanobacteria which results in producing an anoxic state which likely contributed to the massive die-off of freshwater snails seen in this area on August 12, 2019. Clearly the hydro-dynamics of these two ponds are such that the 10 mg/L maximum should be revisited by the EPA.
9) Although, under many circumstances, nitrogen is not the limiting nutrient in fresh water; it is in salt water and most fresh water eventually makes its way to salt water. The Merrymeeting River flows into Lake Winnipesaukee which gives rise to the Winnipesaukee River and later the Merrimack River which flows into the ocean. While the cycles for nitrogen are different from phosphorus, continued dumping of nitrogen into fresh water certainly can't help the nitrogen levels at the ocean. I think the EPA should act proactively now in order to prevent the same nitrogen surplus situation we are encountering in Great Bay (Dover, NH).
10) In lieu of the past record by this permittee regarding removal of TSS and TN as demonstrated in Table 1, I am requesting the EPA to set a numeric limit on both TSS and TN in the PMSFH discharge permit. In addition, I believe the test sensitivity for TSS is much to high (the test fails to detect TSS concentrations below the 2 mg/L test sensitivity-Appendix A). Test samples where TSS results fall below 2 mg/L are read a zero. Despite this, the PMSFH discharges over 40,000 lbs./y into the Merrymeeting River. To illustrate the danger here, should the hatchery discharge 1.9mg/L TSS continuously for 1 year it would report zero pounds of TSS to the EPA when they actually discharged 36,000 lbs.to the river. I recommend a test sensitivity no greater than 0.5 mg/L for TSS. In addition, since TSS particle size is directly related to their ability to sediment, in order to prevent benthic settling of discharged solids, I recommend a size

limitation for discharged TSS of no greater than 30 microns in diameter. This can be achieved by requiring the in-line installation of microscreen filters which remove particle of 30 microns or greater.

11) The EPA's Ecoregional Nutrient Criteria for our area for nitrogen discharge is 0.32 mg/L, this seems like a good starting point for a nitrogen discharge limit.

EPA Response

The comment raises concerns about the release of total suspended solids (TSS) and total nitrogen (TN) from the PMSFH, and requests that the Final Permit establish numeric limits on both pollutants. In addition, the commenter requests that the Final Permit establish a lower minimum level (no greater than 0.5 mg/L) for TSS and recommends a limitation on the size of TSS that may be discharged (no greater than 30 microns) which, according to the comment, would be based on an "in-line installation of microscreen filters which remove particle of 30 microns or greater."

According to the comment, releases of TSS and nutrients from the PMSFH have resulted in dense growth of variable milfoil, filamentous green algae and cyanobacteria in Marsh and Jones Ponds. As the Fact Sheet (p. 25) explains, the discharge of nutrients, especially phosphorus, from the hatchery has likely contributed to excessive algal growth in the downstream waterbodies and controlling TP discharge from the hatchery will control algal growth (as indicated by the response variable chlorophyll-a). *See* AR-7 p. 1-1. EPA addresses the concerns about TP elsewhere in this Response to Comments (*see, e.g*. Responses to Comments III.2.1 and VI.2) and focuses here on whether the discharges of TSS and TN from PMSFH require numeric, water quality-based effluent limitations in addition to the narrative water quality-based and technology-based requirements in the Draft Permit. EPA also addresses similar comments on TN and TSS in Responses to Comments III.2.2 and 2.3.

First, the comment supports its argument that "tremendous loads" of TP, TN, and TSS are discharged from the hatchery by referencing data on pollutant loads from the PMSFH from EPA's Enforcement and Compliance History Online (ECHO) Water Pollutant Loading tool. EPA reproduces the commenter's table below (as Table VI-3) and includes additional data for reporting year 2019.

Table VI-3. EPA Echo Pollutant Loading Report for the Powder Mill State Fish Hatchery (2015 through 2019) (adapted from Table 1 attached to comments).

	Test Analyte (pounds per year)		
	Total Phosphorus	Total Nitrogen	Total Suspended Solids
2015	583	15,428	36,128
2016	688	19,865	47,243
2017	983	19,963	33,781
2018	1,354	16,261	43,680
2019	502	8,545	31,868

EPA's Water Pollutant Loading tool calculates annual pollutant loads based on data reported in discharge monitoring reports (DMRs). At PMSFH, TP was always detected in the sample and the estimated annual loads are reasonably representative of the observed quarterly values. The TP load for 2018 is considerably higher than the other years because a single, unusually high quarterly sample reported in December 2018 was extrapolated over three quarters. *See* Response to Comment VI.7.2. On the other hand, PMSFH frequently reports "0" values for TSS and TN, meaning that the sample concentration was below the minimum reporting level (i.e., non-detect).[7] The minimum level is the lowest calibration point in a method or a multiple of the method detection limit (MDL) (whichever is higher). Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor. When a facility reports "0" for a pollutant in the DMR, the loading tool conservatively calculates an annual load by estimating a load for months where "0" was reported based on an average of the observed values. In other words, the ECHO pollutant loading tool conservatively estimates a "worst-case" for pollutants reported as "0" (i.e., non-detect) in some sampling periods. At PMSFH, TSS loads were non-detect for 2 to 3 quarters in most years, meaning that the ECHO load was conservatively estimated based on one or two observed quarterly TSS loads over both outfalls. As an example, in 2016 the ECHO tool reported an annual TSS load of 47,243 pounds (sum of two outfalls). At Outfall 001, three of the four quarterly values were reported as non-detect. At Outfall 002, two of the four quarterly values were reported as non-detect. The observed annual load (based only sample data assuming non-detects equal 0) was 20,512 pounds but the ECHO derived annual load (extrapolating the average quarterly load at each outfall over 12 months) was 47,243 pounds. EPA recalculated the estimated annual load assuming the non-detects were equal to half of the minimum level of 2 mg/L (a common method for estimating non-detect values) at 30,252 pounds. The loads reported in the Water Pollutant Loading tool and reproduced in the Table VI-3 likely overestimate the actual loads from the hatchery given that the Permittee frequently reports "non-detect" for both TSS and TN and the resulting loads derived using the ECHO tool represent a conservative, worst-case estimate. In other words, the actual TSS load discharged to the receiving water in 2016 was likely somewhere between the observed and the ECHO-derived annual loads. At the same time, reported DMR data confirm that PMSFH releases thousands of pounds of TSS and hundreds of pounds of TN in a single month. *See* 2019 Fact Sheet Appendix A.

Related to the issue of reporting "0" on the DMRs, the comment requests that the Final Permit require a test method with a minimum level (i.e., sensitivity) no greater than 0.5 mg/L for TSS. Permittees are required to analyze pollutant using sufficiently sensitive methods approved under 40 CFR Part 136 or 40 CFR chapter I, subchapter N, or subchapter O. A method is sufficiently sensitive if the method minimum level (ML) is at or below the level of the effluent limitation for the measured pollutant, or if the method has the lowest ML of the analytical methods approved under 40 CFR Part 136. *See* Draft Permit Part I p. 7 footnote 2. The ML refers to either the sample concentration equivalent ot the lowest calibration point in a method or a multiple of the method detection limit, whichever is higher. EPA's Regional Laboratory's current minimum

[7] The Draft and Final Permits require the Permittee to report the data qualifier signifying less than the minimum level for each parameter (e.g., < 10 µg/L) instead of "0" for non-detect samples. *See* Final Permit footnote 7 to Parts I.A.1, I.A.2, and I.A.3.

level for TSS methods is 2.5 mg/L. According to the Regional Laboratory, the most common methods (SM 2540D and EPA 160.2), both of which list a minimum detection level of 0.5 mg/L, may not be able to reach such low levels depending on sample integrity. The comment does not recommend a specific method that can achieve such a low minimum level for TSS. The Draft Permit (Part I.A footnote 3 on p. 7) does require the Permittee to report non-detect values as "< ML" rather than as "0" in the future, which will ensure that the appropriate minimum level achieved for each sampling event is reported. Increasing the monitoring frequency from quarterly to weekly will also likely reduce the likelihood of non-detects.

Next, the comment criticizes the Draft Permit for continuing to include narrative effluent limitation guidelines (ELGs) for the concentrated aquatic animal production (CAAP) point source category, pointing out that waste-water treatment technology based on chemical or physical treatment is superior to narrative ELGs for removal of solids. *See* Response to Comment III.2.3 for discussion of ELGs and incorporation into this permit.[8]

Effluent limitations more stringent than technology-based limits based on promulgated ELGs may be established where necessary to meet water quality standards. Water quality-based effluent limitations are requirements necessary to achieve, attain, or maintain water quality standards established under Section 302 or 303 of the CWA and may be in addition to or more stringent than promulgated ELGs or standards. *See* 40 CFR § 122.44(d). For example, the Draft Permit includes narrative conditions which require that the discharge not cause a violation of water quality standards in the receiving water (Part I.A.4) and established more stringent, water quality-based numeric TP limits to address the potential for the effluent to cause or contribute to an excursion of phosphorus-related water quality standards. *See* 2019 Fact Sheet p. 25 and Response to Comment III.2.1. In response to this comment, EPA re-evaluated whether more stringent numeric, water quality-based limits for TSS and TN may be warranted if these pollutants are discharged at levels which will cause, have the reasonable potential to cause, or contribute to an excursion above the applicable narrative state water quality standards. *See* Env-Wq 1703.03(c)(1), 1703.08(b), 1703.12(b), or 1703.14(b), (c).

The comment suggests that uncontrolled growth and reproduction of milfoil is supported by "nutrients and the nutrient-rich muck layer…on the bottom of Jones and Marsh Ponds" and that this layer "probably resulted from the hatchery TSS." The Technical Development Document for the CAAP Point Source Category (AR-91 p. 6-15) describes the potential water quality impacts resulting from the discharge of TSS. TSS can increase turbidity and reduce the depth to which light can penetrate, which then causes a decline in photosynthetic activity and dissolved oxygen at depth. DO levels may also decline because TSS absorbs more heat from sunlight and warm water carries less DO than cold water. As sediment settles, it can smother fish eggs and benthic organisms and increase sediment oxygen demand, which also depletes DO. Suspended solids have been observed to impact sensitive fish species when turbidity exceeds 25 NTU. *See id*. In addition, NH water quality standards for turbidity require that a discharge not cause the receiving water to exceed naturally occurring conditions by more than 10 NTU. Env-Wq 1703.11(b), (d).

[8] In addition, EPA notes that the technology-based effluent limits based upon secondary wastewater treatment applicable to POTWs are equivalent to an average monthly TSS limit of 30 mg/L, seven-day average of 45 mg/L, and maximum daily TSS limit of 60 mg/L, which is considerably more than the benchmark TSS value of 10 mg/L proposed in the Draft Permit. *See* CWA Section 301(b)(1)(B) and 40 CFR § 133.102(b).

Turbidity was sampled in 2017 at the Marsh Pond Boat Launch (located just downstream from Outfall 002) from May through December ranged from 0.43 NTU to 3.95 NTU. This data suggests that the discharge of TSS from the hatchery, which would be expected to remain suspended in the short distance from the outfall, is not at levels that would impact light penetration or fish species or that would violate water quality standards related to TSS.

The layer of "muck" in Marsh and Jones Ponds, which the comment attributes to the discharge of TSS from the hatchery, is a defining characteristic of eutrophic waterbodies experiencing high levels of nutrients that encourage excessive algal growth. When algae die they settle to the bottom and decompose, which can also depress dissolved oxygen concentrations and lead to hypoxic conditions. *See* 85 Fed. Reg. 31,184. It is likely that the "muck layer" observed in Marsh and Jones Pond is similarly a result of decaying algae and not from the direct discharge of TSS from the PMSFH. The occurrence of algal blooms that die and decay at the bottom (causing a "muck" layer) is related to the discharge of TP from the hatchery. The comment further recommends that, in order to prevent benthic settling of discharged solids, the Final Permit restrict the TSS particle size to no greater than 30 microns in diameter because, according to the comment, particle size is directly related to their ability to settle. The comment offers no evidence that the discharge of TSS is settling in Marsh Pond and causing or contribution to violations of water quality standards such that a numeric TSS limit is warranted.

The LLRM suggests that Marsh Pond and the downstream waters have relatively high flushing rates for ponds (e.g., Marsh Pond is expected to flush 54 times per year), which reduces the likelihood that TSS will be in the system long enough to settle, regardless of particle size. In addition, because TP is related to the discharge of solids, any treatment technology or operational changes implemented to achieve compliance with the numeric TP limits in the Final Permit is likely to have a corresponding impact on the discharge of TSS. In the meantime, if TSS concentrations exceed the Draft Permit's benchmark of 10 mg/L, the Permittee must take appropriate steps to reduce the TSS concentration. In addition, the Permittee must report "Fish Feed Efficiency" based on the average monthly amount of feed given and fish weight gain, which is a metric for assessing the Facility's feed management and feeding strategies, which are the primary BMPs for solids control at Part I.C.2.a.1.[9] Part I.C.3.a of the Final Permit has been revised to require the Permittee to report compliance with the TSS benchmark within 30 calendar days following the initial date of exceedance, or, if the benchmark is not achieved within this timeframe, the Permittee will provide a schedule for implementing corrective actions to achieve compliance with the benchmark.

EPA agrees that a water quality-based TP limit is warranted to ensure that the effluent does not further cause or contribute to violations of narrative water quality standards and to address impairments of designated uses. *See* Responses to Comments III.2.1 and VI.2. Moreover, in response to comments received on the Draft Permit's TP limits, the Final Permit has been revised

[9] The Draft Permit required the Permittee to report "Feed Conversion Ratio" (FCR) which is a common metric used in the aquaculture industry to assess feed management and is calculated as fish feed given/fish weight gain. EPA's system for discharge monitoring reports does not have a code for FCR. For the Final Permit, EPA replaced FCR with "Fish Feed Efficiency" which is accepted in the system. Fish Feed Efficiency is calculated as the reciprocal of FCR (fish weight gain/fish feed given) and reported as a percentage. This administrative change does not alter the intent of the parameter, which is to assess the efficiency of feed management.

to establish more stringent numeric TP limits. At the same time, as the comment recognizes, internal loading supported by nutrient-rich sediment built up over many years' cycle of algal blooms and die-offs will likely continue to impact TP concentrations in Marsh Pond even as the contribution from the hatchery is significantly reduced. Ongoing impacts from the existing, internal loading is one factor EPA considered in revising the Final Permit limits. However, water quality issues directly related to the internal loading is best addressed with a holistic, watershed management approach and is, in any case, beyond the scope of the NPDES permit.

The comment states that the TN in the discharge violates New Hampshire's Water Quality Standards Anti-degradation clause and, as such, requires a WQBEL. Consistent with regulations at 40 CFR § 131.12, a state's antidegradation policy specifies the framework to be used in making decisions about proposed activities that will results in changes in water quality. The first level of protection requires that any new or increased discharges maintain the level of water quality necessary to protect existing uses. Additional levels of protection ensure the protection of waters whose quality exceeds levels necessary to support existing uses. New Hampshire's antidegradation policy is designed to preserve and protect the existing beneficial uses and to minimize degradation of surface waters. According to Env-Wq 1708.03, antidegradation applies to proposed new or increased activity (including point and nonpoint source discharges), a proposed increase in loadings associated with existing activities, an increase in flow alteration, or hydrologic modifications. PMSFH has not proposed any new or increased discharge, nor has it proposed to increase loadings associated with existing activities. The commenter does not explain why the discharge of TN would violate the state's antidegradation policy as it applies to new or increased discharges.

The comment also states that algal blooms in Marsh and Jones Ponds are characterized by nondiazotrophic cyanobacteria which forms metalimnetic blooms (not seen from the surface) and during the summer, *Planktothrix isothrix*, makes up 70-90% of the total algal biomass of the ponds. As the comment points out, recent research in western Lake Erie indicates that relative abundance and toxin production of *Planktothrix isothrix* are influenced by TN. While phosphorus has traditionally been associated with algal blooms in freshwater systems, research provided with the comments and additional studies suggest that both nitrogen and phosphorus can play a role in the occurrence of algal blooms and, particularly, that high nitrogen levels favor more toxic strains of cyanobacteria. However, none of the available research conclusively establishes any threshold for nitrogen levels that can be used as the basis for translating narrative water quality standards into numeric effluent limitations or to evaluate whether the levels of TN discharged from PMSFH are likely to exceed levels that would result in violations of water quality standards related to TN. In addition, the conditions of the studies that have observed a link between nitrogen and certain strains of cyanobacteria are not necessarily comparable to conditions the Merrymeeting River watershed (although there is limited ambient data) and, as a result, it is not clear if the same relationship between nitrogen and cyanobacteria would be present in this system. *See* Response to Comment III.2.2.

The commenter suggests using the recommended Ecoregional Nutrient Criteria as a "starting point" for a nitrogen discharge limit. The comment references a TN value of 0.32 mg/L, which is the aggregate reference condition for lakes and reservoirs in Ecoregion XIV: Eastern Coastal Plain. The Merrymeeting River is located in Ecoregion VIII (Nutrient-poor, Largely Glaciated

Upper Midwest and Northeast). For lakes and reservoirs in Ecoregion VIII, the aggregate TN reference condition is 0.24 mg/L. The aggregate TN reference condition for rivers and streams in Ecoregion VIII is 0.38 mg/L, which would be consistent with the selection of a TP value of 10 µg/L from this ecoregion in the 2019 WMP. *See* Comment VI.2. EPA's ecoregional aggregate reference conditions represent values in reference streams within ecoregions representing conditions least impacted by human activities, and thus free from the effects of cultural eutrophication. *See* 2019 Fact Sheet p. 26-27. Recommended TN criteria are based on median TN value of the 25th percentile of the studied waterbodies over four seasons. The value is the best attainable, most natural condition of the resource base at the time of the study. TN values based on the "best attainable" condition is not necessarily the value that must be achieved in order to protect designated uses and meet water quality standards, which is the goal of the water quality-based effluent limits in the NPDES permit. Even among lakes and reservoirs representing the most natural, least impacted conditions, half of the waterbodies had TN values above the recommended criterion based on the median reference value. In contrast to the ecoregional criteria, an effects-based approach (such as EPA's "Gold Book" value or the methodology described in NHDES's CALM) is directly associated with an impairment to a designated use (i.e., fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur and is more representative for an end-of-pipe limit. There is no evidence that the TN concentration at the hatchery's outfalls, or even within Marsh Pond, as low as the ecoregional value are necessary to protect designated uses and maintain water quality to address the occurrence of *Planktothrix* blooms.

While there is not sufficient information to establish a numeric TN water-quality based effluent limit at this time, in response to concerns about the levels of TN from the hatchery, EPA has revised the Draft Permit to include additional requirements related to TN. Part I.A.3 of the Final Permit includes a requirement to measure ambient TN in Marsh Pond (in addition to TP, chl-a, and Secchi disk transparency) and Part I.C.5 of the Final Permit requires the Permittee to implement a nitrogen optimization strategy that optimizes nitrogen removal efficiencies to minimize the annual average mass discharge of TN to the receiving water. As part of the optimization strategy, the Permittee must evaluate the potential reductions in TN that can be achieved by wastewater treatment options designed to meet the TP effluent limitations. EPA may modify the permit if annual reporting under the nitrogen optimization strategy supports the need for a numeric TN limit.

5. Interim Effluent Limitations

Interim requirements for the first 60 months of this permit sets no limit on the discharge of TP, TN and TSS (page 3, Draft Permit). Given the 4-year history of phosphorus pollution of the Merrymeeting River which includes a survey of the River and PMSFH by the EPA itself in 2017 and an EPA required enhancement of reporting requirements by NH F&G from 2016-2017, and the continued increases in the release of TP into the River as reported by NH F&G to the ECHO database (Table 1) it is inconceivable that now in 2020 the EPA is extending this "no limitation on TP discharge" for another 5 years. That is the lifetime of the next effective permit. I believe a different strategy should be used here especially since it is clear the present hatchery phosphorus load is in violation of the State's Antidegradation Policy (see paragraph 4 of this letter).

I believe phosphorus limits should be placed on the PMSFH beginning in 2021 and increased annually until a 10 ug/L limit can be met; this would result in a total annual phosphorus load of 189 lbs./Y. In 2021 the limit should be based on a 20% reduction from the current phosphorus load of 831 lbs./Y. So, the 2021 annual load cannot exceed 665 lbs./Y. In 2022 the annual phosphorus load cannot exceed 533 lbs./Y, etc. This to end when the annual load has reached 189 lbs./Y or a NPWWTF is built.

Recognizing that a requirement for the purchase of new treatment technology or building new temporary buildings would incur tremendous and perhaps un-necessary expense for NH F&G and given the design and construction of the physical plant where fish are raised in show ponds and woods ponds with gravel bottoms which cannot be vacuumed, it may seem there is not much which can be done to improve the discharge of TP,TN and TSS until the new permanent facility is constructed, but of course this is incorrect. More fish could be removed and more staff could be added to increase the collection of fish wastes from once a week to twice a week. I propose no new limitations except those described in this Draft Permit in place for the first year (2020) and at the end of the year compare the NTWWTF discharge loads of TP, TN and TSS with the past few years. If there is a dramatic decrease in these parameters, we know the NTWWTF is having its intended effect. At this point you may want to consider requesting the PMSFH hire two part time assistants to work the summer months from 3:30-6:30PM weekdays (the PMSFH closes to the public at 3:45 and vacuuming stops around 3:30 each day) vacuuming raceways which have not been vacuumed for 3-4 days. In this way you could evaluate the impact of more timely removal of fish wastes. If the effect is dramatic, consider adding more part time staff in year three to include the circular ponds. Furthermore, part time staff could continue to vacuuming wastes on weekends. Conversations with Matt Cochran, Vice President of HRD Inc., reveal that the more frequently fish wastes are vacuumed from the fish rearing tanks the more phosphorus will be removed from the discharge. This information will also give the PMSFH insight into how best to collect the fish wastes in the future using different technology. The other option is for the PMSFH to discontinue raising fish in the show and woods ponds. Fish wastes from these ponds goes directly into the discharge without treatment so an improvement would be expected here. The EPA has two options available for “encouraging the PMSFH to lower phosphorus loads during the interim period”, write the requirement for less fish raised or more personnel into the Draft Permit or create penalties for not meeting the new proposed 20% per year decrease in phosphorus. Each year they do not meet the new annual load requirements they are fined $100,000. This little incentive will surely result in extra staff being hired. By imposing annual phosphorus load restrictions and modifications in best management practices as described above, the PMSFH will be incentivized to get the NPWWTF in operation in less time than 5 years.

EPA Response

The Draft Permit (Part I.C.6) proposed compliance with the numeric, water quality-based TP limits within 60 months of this permit but set no interim requirements to reduce the discharge of TP, TN and TSS prior to the compliance deadline. Consistent with 40 C.F.R. § 122.47, the interim milestones in the Draft Permit addressed the design, construction, and completion of the necessary improvements to meet the new TP limits. The comment requests that the Final Permit establish interim permit limits to reduce pollutants prior to construction of any treatment system. While EPA is not including a compliance schedule in the Final Permit, EPA expects to issue an administrative order that will include interim TP effluent limitations. EPA believes such interim

requirements to reduce TP are reasonable given that final compliance with the TP limits will be years into the future (due to the complexity of achieving compliance with the stringent water quality-based TP limit), the receiving water is currently experiencing significant water quality degradation, the hatchery is demonstrated to be contributing to the existing impairments and excursions of water quality standards, and there are operational changes that may be implemented that could reduce loads even before final compliance is achieved.

The Final Permit's numeric, concentration-based TP limitations of 12 µg/L will result in an annual TP load to the river of 227 pounds per year (a reduction of 726 pounds, or 76%, from EPA's calculated baseline TP load of 953 pounds per year). In response to comments, EPA has determined that a schedule for complying with the Final Permit's TP limits is best achieved through an Administrative Order rather than through the compliance schedule proposed in the Draft Permit. *See* Response to Comments III.7.1 and V. EPA is proposing to establish tiered, interim TP limits that require the Permittee to achieve incremental reductions during the period from the effective date of the permit until the Permittee achieves compliance with the water quality-based TP limits.

EPA expects these interim limits to be established as part of the Administrative Order and EPA will benefit from this comment when considering what the interim limits should require. As this and other comments point out (see Comments III.3, IV.1), there are steps the hatchery can take to reduce pollutant loads to the Merrymeeting River and Marsh Pond even before a plan to achieve compliance is finalized. At the outset, the increased monitoring frequency (from quarterly to weekly) and more precise sampling method for flow (from an estimate to a continuous flow meter) will provide a more accurate estimate of the actual pollutant loads to the river. Interim limits will require incremental reductions in TP loading from the hatchery and will be tiered to require greater reductions in TP as the final compliance deadline approaches. For example, the interim limits could require increasingly greater reductions in TP load from the hatchery in Year 2, Year 3, and Year 4 of the permit cycle. These interim requirements would ensure that substantial progress to reduce TP loads from the hatchery will be achieved even before the final numeric TP limit is met.

As the comment points out, the Draft Permit (Parts I.A.1, I.A.2, and I.A.3) includes an interim reporting requirement for TP for the first 60 months of this permit. The Final Permit has eliminated this requirement because it is redundant (the Permittee will already have to begin weekly monitoring and reporting TP under Parts I.A.1 and I.A.2 upon the effective date of the Permit) and because interim requirements will be addressed in the compliance schedule set forth in the Administrative Order.

6. Maximum Daily Flow Limitation

Draft Permit Part I.A.1 pages 2 and 4. No maximum daily effluent limit. The Draft Permit allows a monthly average of 2 million gallons a day (MGD) for outfall 001 and 4.2 MGD for outfall 002 for an average monthly total of 6.2MGD. Appendix A shows that in 2016 there were 2 months when the total discharge was 8.18 MGD, which is 32% higher than the recommended average. Large increases in effluent flow will reduce the phosphorus concentration at discharge and make it easier to meet the required 14 ug/L limit. This coupled with the fact that the PMSFH is only

required to test for phosphorus on a weekly basis means such an excursion may go unnoticed. Currently the NH F&G, through there water rights to Merrymeeting Lake, are authorized to divert 6.48 MGD from the Lake. I recommend that the EPA set the maximum daily limit for effluent discharge at 6.48 MGD.

EPA Response

The commenter requests that the Draft Permit be changed to include a maximum daily of 6.48 MGD on the combined flow from Outfalls 001 and 002. The commenter correctly points out that the pollutant load to the watershed is a function of both concentration and flow, and that higher flows could result in higher pollutant loads. According to the comment, the NHF&G has water rights to Merrymeeting Lake which authorize the Permittee to withdraw only up to 6.48 MGD, although the commenter provides no reference to support these water rights. EPA contacted NHF&G regarding dam operations and water rights in response to this comment. According to NHF&G, the dam is operated to maintain water levels in the Merrymeeting Lake, with seasonal drawdowns in spring and fall. NHF&G was not aware of any limitations on water withdrawals or water rights as referred to in the comment. *See* AR-98. EPA reviewed the Warranty Deed (dated November 10, 1958) granting to the State of New Hampshire rights to lands, buildings and appurtenances in New Durham, including the Merrymeeting Lake Dam. *See* AR-99. The deed grants New Hampshire rights and privileges to hold back, raise, lower, divert, use, and control waters of the Merrymeeting Lake consistent with maintaining the dam at a height of 648.5 feet above sea level. The requirement to maintain this level is consistent with the current Merrymeeting Lake Dam Operations, Maintenance, and Response Form (revised 05/24/2015). *See* AR-100. EPA was unable to find any record or support for the comment's statement that the diversion from the lake through the hatchery is limited by any means other than maintaining the dam height.

As the commenter points out, effluents are variable and a higher flow at an equivalent concentration could result in a higher pollutant load to the river on a given day. Establishing a maximum daily flow limit would ensure that the load from the hatchery is consistent, but the comment does not explain why such a limitation is necessary to meet water quality standards. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and water quality-based effluent limitation calculations to ensure compliance with WQSs under CWA § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced and the calculated effluent limitations might not be sufficiently protective (i.e., might not meet WQSs). In this case, the water quality standards and reasonable potential consideration at issue are narrative and there is no dilution, because during certain periods all of the flow to the river is through the hatchery. Limiting flow (in order to limit load) may also be reasonable where the pollutant load may have short-term consequences (such as for a toxic pollutant) that would not be adequately controlled on an average monthly basis or where operations could balance limited days of extremely high loads by cutting operations to near zero, enabling a facility to meet average monthly limits even as the daily loads are extreme. Although the cyanobacteria blooms caused by excessive levels of phosphorus can be toxic, the phosphorus itself is not a toxic pollutant and is not associated with acute (short-term) impacts. The water quality-based effluent limits for TP, which are designed to achieve acceptable levels of TP (an indicator pollutant) to reduce chlorophyll-a response, and therefore algal blooms, are premised on an average monthly basis, not on a maximum level of

flow. In addition, fish at the hatchery have to be fed every day and production raceways and tanks cleaned regularly. The daily flow and TP concentration may fluctuate on any given day; however, the Permittee must meet the concentration-based TP limit at each outfall. In addition, EPA revised Part I.A.3 of the Final Permit to include a cumulative mass-based, average monthly load limit of 19 pounds per month, which is based on the average monthly flow and concentration-based TP limit. If the TP or flow spiked during a few days in a calendar month the Permittee would be unlikely to meet the average monthly limits because regular operations must continue for the remaining days.

The Draft Permit proposed reporting the TP load for each outfall and establishes cumulative (sum of the two outfalls) TP load limits on an annual and seasonal (June through September) basis. The concentration-based TP limit applies at the end-of-pipe because the flow through the hatchery comprises all of the outflow from the Merrymeeting Lake to the Merrymeeting River at certain times of year (i.e., there is no dilution of the effluent). In addition, as explained above, the Draft Permit (Part I.A.3) establishes an average monthly mass-based TP limit for the combined flows from the two outfalls to ensure that phosphorus loads remain relatively constant. To meet the final effluent limitations in the Final Permit, the Permittee may elect to shift operations or change outfalls. For this reason, establishing a mass-based limits on the combined flows from the two existing outfalls provides additional flexibility to explore all options to reduce TP at the hatchery. The Permittee must sample TP on a weekly basis with at least one sample conducted during a cleaning event. The Final Permit has been changed to require flow monitoring with a meter or totalizer, rather than an estimate, to ensure that the flow is accurately measured. Finally, the Permittee must also comply with Part II.B.1 of the Final Permit, which requires the Permittee to properly operate and maintain all facilities and systems of treatment and control which are installed or used by the Permittee to achieve compliance with the conditions of the Permit. Therefore, EPA does not believe a maximum daily limit on flow is necessary to be protective of water quality standards in the receiving water. *See also* Response to Comment IV.1.

7. Specific Comments on the Draft Permit and Fact Sheet

7.1 Appendix D

Appendix D. Something is not right about the EPA's calculations of predicted in-lake concentrations of phosphorus, chlorophyll-a and Secchi disk transparency (SDT). Table D-4 appears to be mislabeled and the far right column should be titled: Predicted Value (not TP). In this column the mean and peak values for chlorophyll-a should be expressed in units of ug/L, SDT should be expressed in meters from the surface and Bloom Probability should be expressed as a percentage. TP estimates from empirical models are used to predict annual mean chlorophyll-a (CHL-a) and SDT using another set of empirical equations. As explained previously the observed concentrations of TP were limited to samples collected in April-September and thus to calculate winter monthly averages, a concentration which was 40% of the November 2017 value was used (LLRM, 2019). I believe these estimated winter monthly values are under-estimating the true concentrations. Since these TP values were part of the calculations for Predictive TP I question all these calculations. In addition, in Table D-4 the observed summer

mean chlorophyll-a of 9.6 is actually 11.3 ug/L and the observed summer SDT value is 3.0M (see the MMWMP).

As mentioned previously, Marsh and Jones Ponds have an unusual cyanobacteria which produces metalimnetic blooms not visible from the surface. The organism was discovered by chance by a research team from UNH in 2017 and has been documented in both ponds every year since. So rather than having a current predicted probability of a algal bloom of 2.4% (Table D-4) the probability is 100%. So, either the models are misleading or *Planktothrix isothrix* does not bloom as other algae are predicted to bloom or the Predicted in-lake TP concentration of 16.9ug/L (based on 4 models in Table D-3) is the incorrect real value.

Since all the data reported above are based on current conditions in Marsh Pond, how accurate will the models predict in-lake TP, CHL-a, SDT and Bloom Probability when the hatchery outfall concentrations are fixed at 25ug/L (Table D-5)? Yet, the EPA "expects that the calculated reductions in peak CHL-a and Probability of an Algal Bloom will ensure that Primary Contact Recreation designated use will be supported in Marsh Pond" (Appendix D, p73).

EPA Response

The comment correctly points out that Table D-4 has several typographical errors: the third column should be labeled "Predicted Value" as the values are not estimates of total phosphorus; the estimates of mean and peak chlorophyll-a (chl-a) are correctly labeled as µg/L but the bloom probability should clarify that the value is a percentage and the secchi disk transparency (SDT) should be labeled as meters (m). The Fact Sheet describes the basis for the Draft Permit limits and will not be revised; however, this Response to Comments serves as a record of these errors.

The comment states that Table D-4 of the 2019 Fact Sheet presents an observed summer mean chl-a of 9.6 µg/L but the mean value is 11.3 µg/L based on the 2019 WMP and the observed summer SDT value is 3.0 m. The summer mean chl-a and mean SDT values in Table D-4 are directly from the background data in the LLRM spreadsheets provided to EPA and was calculated as an average of estimated epilimnion values from June through September. Each monthly value was estimated as the average of reported values collected in 2016 through 2018. *See* AR-96. The summary statistics for chl-a in Table 3-5 of the 2019 WMP were based on metalimnion values collected from May 24 through September 15. The difference in the SDT is relatively small (0.1 m) and appears to be an artifact of averaging monthly values. The 2019 WMP appears to have estimated a single mean value for all samples collected between the end of May and mid-September, which results in a mean of 3.018 m. The value of 3.1 m in Table D-4 of the 2019 Fact Sheet, which was based on the summer average presented in the LLRM model, was calculated from average monthly data for June through September. Each average monthly value was estimated as the average of reported values collected in 2017 and 2018. *See* AR-96. Neither value was used in the derivation of the TP limit and these differences, which represent a slight difference in how the summer average observed values were calculated, do not affect the proposed effluent limits.

More significantly, the commenter raises concerns about the unique challenges in Marsh Pond and the downstream waterbodies, including that estimated winter values underestimate the true winter phosphorus and chlorophyll levels in the receiving water and the probability of the

occurrence of algal blooms. EPA re-evaluated the applicability of the LLRM model to the Merrymeeting River watershed for the purposes of establishing effluent limitations and agrees that there are unique factors in this waterbody that may not be accurately captured by the LLRM, in particular, the limited data used to estimate winter TP concentrations and that the summer epilimnion TP concentrations in Marsh Pond (and the downstream ponds) do not decrease as compared to winter values as they do in other lakes and ponds in New Hampshire. These factors, as well as other considerations, led EPA to conclude that more conservative water quality-based TP limits are warranted. The Final Permit establishes year-round concentration-based TP limits of 12 µg/L at each outfall and an annual mass-based TP limit of 227 pounds per year for the cumulative load from the hatchery to Marsh Pond. *See* Response to Comments III.2.1 and VI.2.

7.2 Total Phosphorus Reported Values

2019 Fact Sheet page 24. Phosphorus. There is a discussion about a December 2018 twenty four-hour sample which contained a TP value of 0.780 mg/L. "Because it was high, another sample was taken that month which was reported at 0.013 mg/L. Using the mean of the values (0.04mg/L) for that month results in a mean TP concentration of 0.050 mg/L at outfall 001 from September 2014-September 2019". This is a meaningless statement! Neither this narrative nor Appendix A, from which the values came, actually give the mean of these two TP concentration values which is not 0.04 mg/L but 0.391 mg/L. This seems to be misleading. Besides taking another sample later, what steps were taken to determine the cause of this unusual result? Was the laboratory informed of the problem and allowed to check its quality control procedures?

EPA Response

The comment raises concerns about how EPA should account for the single, extremely high reported value for total phosphorus (TP) in December 2018. The Fact Sheet (p. 24-25) explains that PMSFH reported a maximum daily, 24-hour composite TP concentration of 0.78 mg/L at Outfall 001 on December 12-13, 2018. This value is nearly 7 times higher than the next highest value (0.11 mg/L) reported in discharge monitoring reports between January 1, 2012 and May 31, 2020. Because this value was unusually high, the Permittee collected a second TP sample on December 30-31 and reported that value as 0.013 mg/L. As the commenter points out, the mean value of the two reported TP concentrations in December 2018 [(0.78+0.013)/2] is 0.397 mg/L, which EPA rounded this value to 0.04 mg/L. The Fact Sheet simply intended to point out that the mean value from September 2014 to 2019 (0.068 mg/L as provided in the table on p. 24) is skewed slightly by the single, unusually high value of 0.78 mg/L. The influence of the single, high data point on the overall mean between 2014 and 2019 increases the overall December mean by about 25% as compared to the mean TP concentration using the average of the two reported December values (0.0397 µg/L). EPA contacted PMSFH about the December 2018 TP results at Outfall 001 during development of the Draft Permit. *See* AR-101, AR-102, AR-103. The operator recognized that the value was unusually high and contacted the laboratory to inform them of the issue and request that the test be repeated, which was done and the same result reported. PMSFH notified NHDES of the high value. A second sample was performed during the month and confirmed that the second sample value (0.013 µg/L) was within the typical range for the hatchery. In the Draft Permit, EPA accounted for both the 0.78 mg/L and 0.013 µg/L samples and neither was discounted.

The LLRM developed for the 2019 WMP estimated average TP concentrations of 0.03 mg/L for Outfall 001 and 0.06 mg/L for Outfall 002 in December, and annual average TP concentrations of 0.03 mg/L for Outfall 001 and 0.05 mg/L for Outfall 002. The LLRM appears to underestimate the TP concentration at Outfall 001 based on the DMR data, including the single, extreme December 2018 value of 0.78 mg/L. The mean TP value for Outfall 001, including both samples collected in December 2018, is 0.12 mg/L. Substituting the DMR-based values, including a December mean of 0.12 mg/L, for the Hatchery flow and TP values in the LLRM model for Marsh Pond results in a total load of 432.4 kg/year from the hatchery (953.3 lbs per year) and a predicted in-lake TP concentration of 18.6 µg/L (as an average of the empirical model values) to 20 µg/L (based on mass balance). At the same time, EPA manipulated the TP contribution from the hatchery to establish the TP effluent limits in the Draft Permit that are predicted to achieve target in-lake concentrations based on the LLRM, which means that the TP data at issue in the comment does not impact the calculation of the effluent in the Draft Permit. Moreover, the Final Permit's year-round, numeric TP limits of 12 µg/L will ensure that the TP concentration in Marsh Pond is consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* AR-80 p. 65.

7.3 Request for Additional Reporting Requirements

Part I.D.3. Submittal of Requests and Reports to the EPA Water Division. Nowhere in the Draft Permit is there a requirement for a commissioning protocol, trial, or report. The NPWWTS will be a complex group of structures which treat the entire waste water stream, therefore, all automated and electronic systems including automated data loggers, should be tested under field conditions to protect both the owner (permittee) and the EPA. It will show whether the design can achieve the limitations mandated, the amount of labor necessary, and the quantities of consumable supplies needed. The EPA should mandate a commissioning protocol be developed sometime after the design is complete and the EPA should attend the commissioning. The final commissioning report should be sent to NH DES, NH F&G, USEPA and be made available to the public. Please add to this list (7) Commissioning Report for the NPWWTF.

EPA Response:

The comment requests that the Final Permit be revised to require the Permittee to develop and implement a commissioning protocol for any wastewater treatment technology installed to meet numeric TP limits. The Final Permit's TP limits are water quality-based and are designed to ensure the hatchery effluent will be at or below a target in-lake concentration consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. However, the method of compliance with the water quality-based limits is at the discretion of the Permittee, as is the specific details of the design of any treatment system designed to meet the limits, including the amount of labor necessary and the quantities of consumable supplies needed. *See also* Response to Comment VI.1. Because EPA is not mandating that the Permittee install a specific technology to comply with the limits, including requirements for commissioning a technology is beyond the scope of the NPDES permit.

7.4 Compliance Schedule

Part I.E.4. State Compliance Schedule. Add the final hatchery fish biomass to be held at the PMSFH after the NPWWTF is in operation to the schedule after 6 months from the effective date. If commissioning is being done by some agency other than the NH F&G, the State should also receive a copy of the Commissioning Report.

EPA Response:

First, the State conditions at Part I.E. of the Draft Permit have been removed. EPA and NHDES expect to address the Facility's expected inability to meet the new TP limits through use of its enforcement authority. *See* Response to Comment III.7. The comment requests that the Final Permit limit the fish biomass to be raised after any treatment system is installed and operational. First, the production levels at the hatchery are at the discretion of the Permittee and are bound, for CWA purposes, only by the requirements that it continues to comply with the numeric limits, benchmarks, and narrative conditions of the Final Permit. The Final Permit (Parts I.A.1 and I.A.2) continues to require the Permittee to report the biomass held and fish feed fed at each outfall. EPA expects that the Permittee will factor any potential increase in the production of fish at the hatchery into the design of any treatment system used to achieve compliance with the permit limits. However, the Final Permit does include requirements on the technology that the Permittee elects to achieve compliance with the water quality-based TP limits in the Final Permit. *See also* Response to Comment VI.7.9.

7.5 Minimum Level for Total Phosphorus Test Method

Draft Permit page 8; Part I.A.9. For the purposes of this permit, TP attesting and reporting requirements must be completed using a test method in 40 C.F.R. 136 that achieves a minimum level of detection no greater than 10 ug/L. day. Testing laboratories routinely test water for phosphorus with a detection limit as low as 1 ug/L. I advise the EPA make this the new test sensitivity level. The PMSFH, on average, discharges greater than 6 million gallons of water containing phosphorus a day (as indicated in Appendix B). Each 9 ug/L undetected in this waste water amounts to 34.8 ug/gallon which if undetected in half of the discharge water would amount to 83.8 lbs./y.

EPA Response

Permittees are required to analyze pollutant using sufficiently sensitive methods approved under 40 CFR Part 136 or 40 CFR chapter I, subchapter N, or subchapter O. A method is sufficiently sensitive if the method minimum level (ML) is at or below the level of the effluent limitation for the measured pollutant, or if the method has the lowest ML of the analytical methods approved under 40 CFR Part 136. *See* Draft Permit Part I p. 7 footnote 2. The ML refers to either the sample concentration equivalent ot the lowest calibration point in a method or a multiple of the method detection limit, whichever is higher. For TP, a method that achieves a ML of 10 µg/L is sufficiently sensitive because it is at or below the proposed effluent limit of 12 µg/L.

The comment requests that the Draft Permit be changed to require a detection limit for total phosphorus lower than the limit of 10 µg/L that can be achieved with a test method in 40 CFR Part 136. The comment suggests that laboratories "routinely" test water at detection levels as low as 1 µg/L but does not specify which test method(s) achieve this level. There are many EPA-approved methods listed in 40 CFR Part 136 that achieve a ML of 10 µg/L. It is difficult to remove the background levels of phosphorus when analyzing a sample, which is why low values are difficult to obtains. A ML of 5 µg/L is possible if the laboratory uses dedicated, acid washed glassware and disposable digestion tubes to eliminate interference. Personal Communication with B. Patel, EPA. *See* AR-104. The Draft Permit (Part I.A.) requires the Permittee to report non-detect values as "< ML" rather than as a zero in the future.

7.6 Auxiliary Treatment System

Draft Permit Part II.B.1 This provision requires the operation of back up or auxiliary facilities in order to meet appropriate quality assurance procedures. If the NH F&G decided to install a clarifier and solids storage facility and in-line microscreen filters as proposed in 2002 by FishPro Inc at the request of the NH F&G, will the EPA mandate a back up system? This was thought to be a high priority by FishPro in 2002 and I would recommend such a system, as long as the clarifier has provision for coagulant dispensers. Should this technology be selected would the EPA:

a. Mandate additional staff training in the Operation and maintenance of this equipment?
b. Mandate a commissioning protocol be followed before the facility is accepted by the permittee?
c. Mandate back up or auxiliary facilities in the event of failure.
d. I would recommend that all wastewater treatment facilities and practices remain in place until the commissioning is completed and approved by EPA.

EPA Response

The comment requests that the Final Permit include requirements to install and operate an auxiliary or "back up" system for any future treatment technology that the Permittee installs to comply with the Final Permit's TP limits. The Final Permit establishes new TP effluent limits for the PMSFH, but it does not mandate any specific method or strategy for achieving those limits. Although a wastewater treatment facility (WWTF) is one option, the permit does not mandate it. Part II.B of the Final Permit contains various "operation and maintenance" provisions, including "the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the Permit." Should the Permittee elect to construct a WWTF, EPA will consider whether new and additional permit terms are necessary to address the operation of such a facility.

7.7 Calculation of Phosphorus Loading

Using the information available in Appendix A, B and D in this draft permit the annual phosphorus load from the PMSFH is 968.5 lbs./y (A), 783.8 lbs./y (B) or 831.6 lbs./y (D). It

appears the EPA used 831.6 lbs./y in describing its TP limitations. However, from the standpoint of designing a waste water treatment facility a 185 lbs./y difference may be significant when trying to achieve no more than 14 ug/L at the outfalls. But there is another problem- Table 1 demonstrates that in 2018 the NH F&G reported to the ECHO system that it discharged 1354 lbs. of TP. Now the potential difference is not 20% (185 lbs.) but 72% (571 lbs.). It seems important that the correct TP discharge is chosen before construction of a new facility begins.

But there is a problem. Normally a 60-month period before a new facility is required would allow for increased sampling to better refine the phosphorus discharge load. I suspect the EPA had this in mind when they increased sampling for TP to weekly. But by putting into operation a new waste system without carefully defining the amount of TP this new system is removing from the waste stream, defining the total waste stream phosphorus (the PMSFH load) may be problematic. I had suggested that before the new system was made operational, that several weeks of testing occur at outfall 002 and that this be repeated for several weeks after the new system when on-line. The difference in TP levels at 002 would have provided this much needed information. This was never done. Testing the outfall now will only tell us how much the new system does not remove from the waste stream.

EPA Response

The comment raises two concerns about the calculation of the TP load in the effluent as presented in the Fact Sheet. First, the commenter explains that the TP data presented in Appendix A, Appendix B, and Appendix D results in 3 different annual loads and all values are substantially less than the annual load reported in EPA's ECHO database. The commenter indicates that the design and construction of a new treatment system should be based on "the correct TP discharge." First, EPA has not directed PMSFH to use any TP load for the basis of its design. The Final Permit establishes an average monthly and maximum daily TP concentration and a seasonal load limit. The Permittee holds the responsibility of ensuring that whatever treatment system and/or operational changes are implemented in the future will meet these limits each day.

Second, it is unclear what the commenter means by the "correct" load. The 2014 Permit did not limit TP and the effluent concentration varied considerably. *See* 2019 Fact Sheet Appendix A. The calculated load, based maximum daily TP concentration, effluent flow, and a conversion factor (equal to 8.34 to convert mg/L into lbs/day), varies depending on how the reported TP load is extrapolated over time. For example, the quarterly TP values reported in Appendix A are essentially a snapshot of a single day over a quarter. EPA was unable to replicate all of the loads presented in the comment. Using the average flow rate (1.97 MGD for Outfall 001 and 4.2 MGD for Outfall 002) and average TP concentration (0.051 mg/L for Outfall 001 and 0.05 mg/L for Outfall 002) from Appendix A results in an estimated annual load of 944 lbs/year (305 lbs/year at Outfall 001 and 639 lbs/year at Outfall 002). Using the average reported pounds TP per day at Outfall 001 (1.2 lbs/day) and Outfall 002 (1.56 lbs/day) and extrapolating over a year results in an annual load of 1,007 pounds. Appendix B of the 2019 Fact Sheet presents the results of TP and flow collected once or twice per month throughout 2017. Again, the pollutant load depends on how the twice monthly data (at most) is extrapolated over the entire month. EPA calculated the daily load for each sample date based on the reported effluent flow and TP concentration, then averaged the values for the months in which two samples were collected. Summing these

values over the year results in an annual load of 827.4 pounds, which is different from the value reported in the comment (738.8 lbs). The commenter states that Appendix D uses a TP load of 831.6 lbs/year in describing its TP limitations, but EPA is unclear what the source of this value is. Appendix D presents the annual hatchery load (833 lbs/year) calculated using on the LLRM model and presented in both the 2019 LLRM Report and 2019 WMP. *See* 2019 Fact Sheet p. 69, 72. Finally, the ECHO database calculates facility pollutant discharges based on DMR data reported by the Permittee. The reported pollutant load for 2018 would be relatively high because the DMR data includes a value of 14 pounds per day in December 2018 (based on a concentration of 0.78 mg/L) for Outfall 001. The reported annual load was 583 pounds in 2015, 688 pounds in 2016, 983 pounds in 2017, and 502 pounds in 2019. The average pollutant load over the past five years is 822 pounds per year, which is based on 20 quarterly samples (rather than the four samples used for 2018 alone) and likely captures the actual variability of the load. In sum, the seasonal and year-to-year variability in the reported TP and flow data strongly influences the calculated TP load in the effluent. The increase in the monitoring frequency in the Final Permit (from quarterly to weekly) and the change in sampling method for flow from an estimate to a continuous flow meter will ensure that future estimates of pollutant loads are moe precise. Ultimately, the Final Permit establishes numeric, concentration-based TP limits for each outfall that are designed to ensure that the TP concentration in Marsh Pond will be at or below an in-lake concentration consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* AR-80 p. 65. Any treatment system must be designed to ensure that the Permittee can meet the limits or it risks violating its NPDES permit, regardless of the current load at the hatchery. For a detailed discussion of the operation of the interim system under the Final Permit, see Response to Comment VI.1.

7.8 Total Phosphorus Effluent Limit (2)

I want to once again stress the point that the goal of the Cyanobacteria Mitigation Steering Committee and the New Durham Water Quality Committee is not just to reduce phosphorus in the Merrymeeting River but to do so in a manner which begins to remediate the damage already done. The water quality goals committee decided they wanted to eventually return Marsh Pond to a status it likely had before the PMSFH was constructed. We therefore agreed to aim at restoring the waterbody to mesotrophic status. We considered the NHDES threshold for mesotrophic waterbodies of 12ug/L TP and with the 10% safety margin the revised threshold was 10.8 ug/L TP. After considerable discussion we all agreed to aim for 10 ug/L monthly average TP. This took into consideration the present remaining assimilative capacity of that waterbody being -32.3 ug/L (WMP page 26). By setting the limit for TP discharge at 14/25 ug/L the EPA has decided not to honor the conviction of the many stakeholders who choose this water quality goal but to recommend a higher limit on TP. Page 6 of the 2019 Fact Sheet states: "the objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's Waters". Only time will tell which decision is best, but please keep this in mind: the community wants a mesotrophic waterbody. Perhaps the EPA could include within the Fact Sheet what next steps will be taken should the suggested limits on TP continue to cause degradation of Marsh Pond.

EPA Response

In response to this and other comments on the Draft Permit, the Final Permit establishes more stringent, year-round, water quality-based TP limits at an effluent TP concentration of 12 µg/L. Based on the estimated flow from the Merrymeeting Lake in the LLRM, the TP concentration downstream of Outfall 002 in the non-growing season is expected to be about 10 µg/L or less. *See* Response to Comment VI.2. A year-round effluent limit of 12 µg/L will ensure that the TP concentration in Marsh Pond will be at or below an in-lake concentration consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire.

The Final Permit's year-round, water quality-based TP limits of 12 µg/L result in an estimated, annual average in-lake TP concentration of 9.5 µg/L, which will ensure that TP concentrations in Marsh Pond are protective of the primary contact recreation and aquatic life designated uses. In fact, on an average annual basis the more conservative Final Permit limits are estimated to be consistent with the more stringent in-lake TP concentration recommended in the comments and in the 2019 WMP. The annual TP load based on the Final Permit's concentration-based limits is 227 pounds TP per year, which is a 76% reduction from the estimated current load based on DMR data (953 pounds). The LLRM for Marsh Pond using the total estimated annual load at each outfall based on the Final Permit limits predicts an annual average in-lake TP concentration of 8 µg/L and a mean chl-a concentration of 2.6 µg/L. These values are consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* AR-80 p. 36. The TP value is also consistent with the Ecoregion VIII reference condition for rivers and streams used as the basis for setting water quality goals in the 2019 WMP, according to the comment. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond.

7.9 Options for Hatchery Operations

It is difficult for me to believe that, after going through all this trouble and expense to design and construct a NPWWTF, the NH F&G would not consider moving the rearing operations for other State hatcheries into this one. The State maintains a total of 6 hatcheries and at least some of those fish could be raised under conditions where waste water is fully treated before discharge. Also remember that there are likely another 50,000 Atlantic Salmon coming back to this hatchery. Draft Permit Part I.A.11 requires the permittee to report within 90 days any significant increase in fish biomass. Perhaps it would be a good idea for the EPA to encourage planning for the additional fish which will need to be considered before any future design of the NPWWTF. Set a date in the Compliance Schedule for a final determination of fish biomass to be raised under the design of the NPWWTF at PMSFH.

EPA Response

The Final Permit includes certain narrative condition for solids management (Part I.C.2.a.1) and nutrients (Part I.C.5), and requires the Permittee to meet a benchmark for TSS (Part I.A.1, I.A.2, and I.C.3) as well as numeric, water quality-based TP limits (Part I.A.1, I.A.2, I.A.3). These limits and conditions apply to the discharge of effluent from the hatchery regardless of the

biomass held at the Facility. The production levels at the hatchery are at the discretion of the Permittee and are bound, for CWA purposes, only by the requirements that it continues to comply with the limits and conditions of the Final Permit. The Final Permit (Parts I.A.1 and I.A.2) continues to require the Permittee to report the biomass held and fish feed fed at each outfall. EPA expects that the Permittee will factor any potential increase in the production of fish at the hatchery into the design of any treatment system used to achieve compliance with the permit limits. Indeed, as the comment suggest, NHF&G may want to consider planning for additional fish when designing any treatment system. However, the Final Permit does include requirements on the technology that the Permittee elects to achieve compliance with the water quality-based TP limits in the Final Permit.

7.10 Penalty for Violating NPDES Permit Limits

I see a lot of criminal and civil penalties in Part II.A.1 for persons who violate a provision of the NPDES permit, but I do not see penalties for any agency, Department, or permittee in the event that the NPWWTF fails to comply with the TP limitations. Penalties here should be based on the impact any exceedance has on the water quality of the Merrymeeting River. Something like this: exceed the 14 ug/L by 25% for any one month the fine is $1000. Exceed by 50% the fine is $5000. Exceed the 87lbs. by 25% during the summer the fine is $50,000. Exceed the 87lbs. by 50% the fine is $100,000. I think the EPA should be creative here and I also think these penalties should be in effect the moment the commissioning period is over and the NPWWTF is approved for operation.

EPA Response

The comment suggests that EPA apply "creative" criminal or civil penalties for violation of the NPDES permit, such as a scaled penalty based on the magnitude of the violation. The authority to implement and enforce NPDES permits is set out in U.S.C. § 1319. As the comment correctly points out, the responsibility to comply with the permit conditions is described in Part II.1 of the Draft Permit, including the potential civil or criminal penalties for non-compliance with any of the effluent limitations or conditions of the Final Permit, including the TP limit. The TP limit in the Final Permit is a water quality-based effluent limitation and must be achieved by the Permittee regardless of the effectiveness of any particular technology that the Permittee installs and operated to achieve compliance with the limit. *See also* Response to Comment VI.7.11. The CWA does not provide EPA with authority to subject non-permittees, who are not themselves engaged in a regulated activity, to enforcement actions based on violations by a permittee.

7.11 Reopener Clause

Finally, I do not see any clause in the new Draft Permit or Fact Sheet which allows for reconsideration of the phosphorus permit limit established in this permit, should future water quality testing show continued degradation of water quality in Marsh Pond. The EPA expects, with a total annual load of 395 lbs./y to see improvement in algae blooms and a median Marsh Pond concentration of 12 ug/L. Please state clearly in this permit, exactly when you feel these

water quality goals should be met following the full operation of the NPWWTF and what steps will be taken next, should these goals not be met in the time limitation you set forth.

EPA Response

As stated above, EPA anticipates issuing an administrative order containing a schedule for compliance with the final TP limit. If the Permittee cannot comply with the Final Permit's effluent limitations by the schedule contained therein, the Permittee would be subject to additional enforcement action. The comment expresses concern that there is no clause in the Draft Permit that would allow for reconsideration of effluent limitations if the limits appear insufficient to address water quality impairments. Part II.4 of the Draft Permit (Reopener Clause) reserves the right for EPA to make appropriate revisions to the permit to establish any appropriate effluent limitations, schedules of compliance, or other provision which may be authorized under the CWA in order to bring all discharges into compliance with the CWA. In addition, the NPDES permit expires five years from the effective date, at which time EPA must review the effluent limitations and establish whether water quality standards are being met. If the permit limits are not sufficient to meet water quality standards, the permit may be re-issued with more stringent limits.

EPA has conservatively set the end-of-pipe TP limit consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire, given the unique factors of this system (e.g., that, during certain times of year there is no dilution of effluent and all of the flow to the Merrymeeting River passes through the hatchery). If there continues to be water quality issues and algal blooms in the downstream waterbodies, even after the significant reductions in TP from the hatchery, an additional source of nutrients, such as internal loading, is a likely cause. See AR-27 p. 13-14. Ongoing impacts from the existing, internal loading is a significant factor of which EPA is aware. However, water quality issues directly related to the internal loading is best addressed with a holistic, watershed management approach and is, in any case, beyond the scope of the NPDES permit.

8. Potential Additional Monitoring Studies

I have a question concerning item #7 on page 10 of the Draft Permit. "The discharge shall not result in toxic substances or chemical constituents in concentrations or combinations in the receiving water….". I believe the phosphorus contained in the hatchery discharge was of sufficient quantity to result in a bloom of the cyanobacterium, Planktothrix isothrix. Studies of this organism in other settings have shown it capable of producing three cyanotoxins, each harmful to human health. Some of these toxins have also been shown to accumulate in aquatic animals including fish. My question is: are we obliged, due to this statement, to test the Planktothrix found in Marsh and Jones Ponds for these cyanotoxins? And, if any toxins are found, are we obliged to test fish living in the vicinity of the Planktothrix blooms? Fish are regularly harvested from these waters and I suspect they are eaten.

I have a question regarding item #8 on page 10 of the Draft Permit. "The discharge shall not result in benthic deposits that have a detrimental impact on the benthic community". We have conducted a whole algal species profile on Marsh Pond and found it greatly disturbed however,

we have not conducted the most appropriate study of benthic communities which is a macroinvertebrate analysis. Does this statement oblige us to conduct a macroinvertebrate analysis of the deep site on Marsh Pond?

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. For this reason, EPA has elected to establish year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. NHDES has developed a methodology to address toxic cyanobacteria blooms through implementation of total maximum daily loads. EPA believes that the conservative, water quality-based TP limits in the Final Permit, which are consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire to address cyanobacteria (*see* AR-80), will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the water quality-based limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.0, III.2.1 and VI.2.

VII. Comments from Representative Harrington (Public Hearing)

Hello. I am Representative Mike Harrington, speaking for the Cyanobacteria Mitigation Steering Committee.

Thank you for this opportunity to publicly comment on the draft discharge permit for the Powder Mill Fish hatchery.

As you know, the water quality in the Merrymeeting River has been deteriorating for many years, resulting in frequent cyanobacteria blooms in the ponds of the River. The Powder Mill Fish Hatchery has been determined to be the single major source of pollution to the River in New Durham.*

The towns of New Durham and Alton, through the Cyanobacteria Mitigation Steering Committee, took it upon themselves to find the cause of the deterioration and see if something could be done to stop or reverse the decline in water quality. Over 100 volunteers have spent countless hours taking water samples, compiling data, doing research, exploring and mapping the river in an effort to find the source of the problem and determine what could be done about it.

We financed and completed a Watershed Management Plan and associated documentation to properly and accurately present the data collected, the research done, and the conclusions reached. The Watershed management Plan has been approved and accepted by the NH Department of Environmental Services, and you have been given the Plan and all of its supporting documents.

If we are to have any chance of restoring the river to a level of quality that will allow us once again to swim, fish, boat, or otherwise enjoy our river, we request, and our Watershed Management Plan requires, strict limits on the discharge from the Powder Mill Fish hatchery. The Cyanobacteria Mitigation Steering Committee, through its Water Quality Committee, concluded that the Fish Hatchery, must discharge no more than 10 ppb of phosphorus, with a limit of 189 lb/year of P, and commensurate amounts of suspended solids and nitrogen, into the Merrymeeting River.

Your decision in the draft permit to allow the discharge of 25 ppb and 14 ppb of phosphorus is unacceptable to us. Such levels guarantee the continued degradation of the ponds below the fish hatchery in New Durham, and the eventual degradation of the entire marsh and river system below the ponds, culminating in damage to Alton Bay of Lake Winnipesaukee. The CMSC, its volunteers, and the residents of both Towns, who supported the work by funding the Watershed Management Plan, are committed to doing the best that we can for the Merrymeeting River to restore it to health. We request, and expect, your full support in doing so, starting with setting a proper, and attainable, limit to the discharge from the Fish Hatchery.

This statement was unanimously approved by the CMSC on January 31, 2020

EPA Response

EPA received many comments suggesting that the Draft Permit's total phosphorus (TP) limits would continue to result in degradation of the water quality in Marsh Pond and downstream waterbodies. The comment requests that the Final Permit TP limits be made more stringent. Specifically, the comment states that the discharge must limit TP to no more than 10 µg/L with a mass-based limit of 189 lb/year consistent with the 2019 WMP. *See* AR-81. EPA appreciates the work that was conducted to develop the 2019 WMP and finds it to be a useful and important source of data and technical information for the development of the Draft and Final Permits. However, the goals and objectives contained therein are not binding on the Agency. Consistent with CWA Sections 301 and 402, EPA must, amongst other obligations, ensure that the State of New Hampshire's water quality standards are adequately protected.

Water quality-based limitations are established for all pollutants or parameters which EPA determines will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including narrative criteria for water quality. CWA Sections 301, 402; 40 CFR § 122.44(d). EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. However, the 2019 WMP does not explain how a numeric TP limit of 10 µg/L is necessary to satisfy the requirements for establishing water quality-based limits for narrative water quality standards at 40 CFR § 122.44(d). *See also* Responses to Comments III.2.1 and VI.

At the same time, EPA was persuaded to revisit the basis of the Draft Permit's TP limits and determined that more stringent TP limits are warranted. *See, e.g.*, Responses to Comments VI.2 and VI.3. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each

outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Response to Comment VI.2.

The comment also requests "commensurate amounts" of reductions in the discharge of TSS and TN. However, the comment offers no evidence that the discharge of TSS or TN is causing or contribution to violations of water quality standards such that a numeric limitation for either pollutant is warranted. For a detailed discussion regarding the conditions for TSS and TN contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.2, III.2.3, and VI.4.

VIII. Comments from New Durham Board of Selectmen (Public Hearing)

The New Durham Select Board appreciates the EPA's development criteria for the continued permit to the New Hampshire Fish & Game Powder Mill State Fish Hatchery (PMSFH). While we agree with many of the provisions noted in the proposed permit, there are several areas where the Select Board has considerable concern and strongly differ with selected criteria / provisions noted in the proposed EPA permit # NH 000070.

As background information, it is important to emphasize that the Select Board, through irrefutable evidence over several years, believes that PMSFH is responsible for polluting the Merrymeeting River (MMR) thus causing the downstream ponds from PMSFH including Marsh, Jones, and Downing Ponds, to be classified as impaired for Primary Contact Recreation per the 303 (d) listing due to cyanobacteria and associated hepatotoxins. PMSFH, through its discharge of pollutant phosphorus without proper treatment prior to discharge, has resulted in phosphorus concentration and related issues of total solids and nitrogen so high that the portions of the Merrymeeting River such as Marsh Pond to become the most degraded category - eutrophic. This has had a negative impact to the Town's economic well-being as its primary source of tourism is through its natural resources, i.e. Lake Merrymeeting, Merrymeeting River, and related ponds.

The goal for the New Durham Select Board is not only to reduce phosphorus in the Merrymeeting River but to do so in a manner which initiates an opportunity to remediate the damage already done by the PMSFH and other sources of phosphorus in the Merrymeeting Watershed. The Town has already begun to address this by committing significant direct Town sourced funding in 2019 and 2020 for remediation of the Town's boat access on Marsh Pond, an application for Section 319 funds to remediate storm water runoff at Merrymeeting Road Bridge at South Shore Road along with substantial matching Town funds should the grant be awarded in 2020.

The Select Board believes there are five primary shortcomings in the proposed EPA Permit Application # NH000070:

1) The proposed summer month limit of 14 ug/L total phosphorus (TP) is unlikely to prevent cyanobacteria blooms. Additionally, the combined maxima of 14 ug / L for the summer months and 25 ug/L over the course of the year are unlikely to prevent future cyanobacteria blooms or remove Marsh Pond from its current impaired status.
2) The net increase of TP load of 208 lbs/year over the proposal put forward in the Merrymeeting Watershed Management plan developed in 2019 will make meeting all of the downstream water quality goals nearly impossible.
3) The Draft EPA Permit does not provide limits on the discharge of total suspended solids (TSS) and total nitrogen (TN) which are critical to addressing a holistic approach to achieve both EPA's goals and the Town's goals of restoring the currently impaired waterbodies to mesotrophic status.
4) The current permit proposal has no provision for reconsideration of the phosphorus permit limit established should future water quality testing show continued degradation of water quality in Marsh Pond or other Merrymeeting Watershed waterbodies.
5) The EPA expects to see improvement in algae blooms and a median Marsh Pond concentration of 12 ug/L. However, there is no projection in this permit exactly when EPA feels these water quality goals should be met and what steps will be taken next should these goals not be met in the time limitation set forth.

The Select Board concerns noted in the comments herein directly relate to the New Durham's approved Master Plan addressing the natural resources which define the character of the Town. One of the Town's primary natural resources is Merrymeeting Lake and Merrymeeting River and its related ponds. New Durham's Master Plan states its intent is "To preserve New Durham's natural resources and rural landscape for the sustainable health, safety. and welfare of current and future generations". Under the current EPA permit proposed for the PMSFH the Select Board does not see that the EPA fully understands nor shares the Town's intent to preserve New Durham's natural resources and help mitigate already impaired water bodies from continued phosphorus and other pollution from PMSFH.

Therefore, the Town of New Durham's Select Board strongly urges the EPA to reconsider its allowable phosphorus discharge limits for PMSFH to no more than a maximum of 10 ug/L total phosphorus monthly average for each month of the year and address in specific criteria the discharge limits of total suspended solids and total nitrogen to reduce key pollutant sources. This TP maximum and other criteria limits may then allow the Merrymeeting River and its related ponds to eventually return to a mesotrophic status preventing further cyanobacteria blooms from occurring and diminish the potential for phosphorus pollution in New Hampshire’s largest economic tourist hub – Lake Winnipesaukee.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final

Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4.

Finally, the comment raises concerns that there is no provision to reconsider the TP limits if continued degradation exists even after the Final Permit's TP limits are met, and no projection of when EPA believes the water quality goals should be met. Water quality-based limitations are established for all pollutants or parameters which EPA determines will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including narrative criteria for water quality. CWA Sections 301, 402; 40 CFR § 122.44(d). EPA has established water quality-based TP limits that will control the discharge of TP in the effluent such that the TP concentration will be at or below an in-lake concentration consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* AR-80 p. 65. In other words, EPA has conservatively set the end-of-pipe TP limit at the in-lake target concentration set by NHDES given the unique factors of this system (e.g., that, during certain times of year there is no dilution of effluent and all of the flow to the Merrymeeting River passes through the hatchery). If there continues to be water quality issues and algal blooms in the downstream waterbodies, even after the significant reductions in TP from the hatchery, an additional source of nutrients, such as internal loading, is a likely cause. See AR-27 p. 13-14. Ongoing impacts from the existing, internal loading is a significant factor of which EPA is aware. However, water quality issues directly related to the internal loading is best addressed with a holistic, watershed management approach and is, in any case, beyond the scope of the NPDES permit.

IX. Comments from Alton Board of Selectmen (Public Hearing)

Alton, through the Alton/New Durham Cyanobacteria Mitigation Steering Committee, participated in the development of a Merrymeeting River and Lake Watershed Management Plan (MMWMP) and contributed taxpayer funds for its creation. In addition, Alton participated fully in the collection of water samples which provided water quality data for the MMWMP. Also, Alton was represented on the Water Quality Goals Committee which established the water quality goal of no more than 10 ug/L total phosphorus (TP) monthly average, for each month of the year, throughout the Merrymeeting River (MMR). Alton has a strong vested interest in the outcome of any long-term strategy which will influence the concentrations and loads of TP in the MMR since its tax base is heavily dependent on waterfront property particularly around Lake Winnipesaukee, the receiving waterbody for MMR water. Our town and its economy, like many in the NH Lakes Region, is also dependent on vacationers to our area throughout the year. Continued high TP loads entering Alton Bay will degrade the water and may result in algal and cyanobacteria blooms which will prove esthetically unpleasing, disrupt primary contact recreation and eventually may also impair aquatic animal life. For each of these reasons we feel everything possible should be done to reduce the TP released from the hatchery to the lowest levels possible given today's technology. We are aware of the experience at the Platte River Hatchery in Michigan and their ability of discharge hatchery water with TP concentrations no higher than their intake water. We encourage this technology be installed at the Powder Mill

State Fish Hatchery (PMSFH) and we insist that whatever technology is installed be capable of reducing the TP concentration to no more than 10 ug/L monthly average, each month of the year.

Currently the MMR delivers over 1900 lbs./year TP into Alton Bay. Our MMWMP predicts that 28% of this load is derived from the PMSFH. Elimination of the PMSFH would reduce the loads to Alton Bay by over 500 lbs/year and create an average concentration of 11 ug/L TP concentration in Wentworth Pond (our impoundment of the MMR 1 mile from Lake Winnipesaukee). Reducing the discharge level of the PMSFH to no more than 10 ug/L will result in an in-lake concentration in Wentworth Pond of 13 ug/L and require some additional stormwater remediation to bring the total in-lake TP to 10 ug/L and prevent further degradation. We are making the commitment to reduce non-point sources of TP in order to achieve the 10 ug/L TP concentration but this will be extremely difficult if the PMSFH is allowed to discharge 14 ug/L in June-September and 25 ug/L from October- May of the year. Therefore, we request the EPA in the Draft Permit to set a limit no greater than 10 ug/L TP at either outfall (monthly average, each and every month of the year).

We also note in the Fact Sheet (p4) that Congress enacted the Clean Water Act to "restore and maintain the chemical, physical and biological integrity of the Nation's waters". Restoration is also a great concern of ours. Marsh Pond and two impoundments in New Durham are holding back enormous quantities of benthic deposits which are nutrient rich and created by the PMSFH release of tens of thousands of pounds per year of total suspended solids (TSS). Through a biological process commonly referred to as spiraling, phosphorus cycles within riverine systems as both organically bound phosphorus and reactive or soluble phosphorus (which is a form readily available to be incorporated into organisms). Phosphorus may be bound to living matter (plants, animals and microbes) or to iron in sediments. The bound phosphorus is stationary for much of the year until the living matter dies and is degraded where upon it is released as soluble and can migrate further downstream. Likewise, iron-bound phosphorus can be released from the sedimentary deposits if anoxic conditions exist near the bottom on the water column. Once released it is soluble again and can move further downstream. We have evidence that at least in Marsh and Jones ponds anoxia does exist near the bottom during the summer months contributing to internal loading and resulting in phosphorus moving further downstream. Therefore, even after the PMSFH has limits placed on its discharge, Alton will experience high concentrations of phosphorus as long as these nutrient-rich benthic deposits exist.

We therefore request that the EPA establish some mechanism to prevent the release of phosphorus from Marsh and Jones Ponds or remove the sediment. In much the same way as the EPA makes the creators of superfund sites clean up the site after it discontinues polluting the environment, we feel the EPA should hold the State Agency, which created the nutrient-rich sediments, responsible for rendering them safe again.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-

round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4.

EPA regulations at 40 C.F.R. § 125.3(c) govern the application of technology-based effluent limitation in permits. EPA addresses how it has addressed technology-based effluent limitations for the Final Permit in Response to Comment III.2.1. In this case, EPA is not free to impose a more stringent technology-based limit for TP but has imposed more stringent effluent limitations based on water-quality considerations. *See* CWA Sections 301, 402.

Finally, the comment suggests that EPA include requirements which prevent the release of phosphorus from Marsh and Jones Ponds or remove the sediment, such as how EPA regulates superfund sites. EPA does not dispute that the PMSFH has contributed to the excessive TP levels in Marsh Pond and the downstream waters or that legacy pollutants are likely a contributing cause to the environmental issues in the downstream waterbodies. However, as explained above, the NPDES permit is not the appropriate tool to address the legacy pollutants in the downstream waterbodies. The CWA does not provide EPA with authority to require a permittee to address removal of legacy pollutants as a condition of an NPDES permit. Rather, the NPDES permit appropriately establishes a conservative, water quality-based TP limit that will address the ongoing contribution of TP from the hatchery.

X. Comments from Alton Conservation Commission (Public Hearing)

The Alton Conservation Commission (ACC) is responding to the Draft National Pollutant Discharge Elimination System (NPDES) permit concerning the Powder Mill State Fish Hatchery (PMSFH), permit number NH 0000710, as announced in Public Notice Number NH-12-19. The Commission appreciates the EPA's development of this draft and agrees with many of the provisions contained within. The Commission is, however, deeply concerned about key provisions and permissions included in the draft permit.

In 2017 the Towns of New Durham and Alton, NH created a joint town committee, called the Cyanobacteria Mitigation Steering Committee (CMSC) which reports to the board of Selectmen of both towns. In 2018, through a process based on qualifications, that committee hired Forrest Bell Environmental Associates (FEE) to develop a Merrymeeting Watershed Management Plan (MMWMP). Over the course of 16 months this group reviewed over three seasons of water quality data collected by the Lay Lakes Monitoring Program (LLMP) volunteers in cooperation with the Laboratory for Freshwater Biology at the University of New Hampshire (LFB-UNH). To produce the final MMWMP, FEE developed a Site Specific Project Plan (SSPP), which called for:

1) modeling which resulted in a Lakes Loading Response Model Report (LLRM)
2) a build-out analysis and report (BOA)

3) a watershed survey of storm water runoff/ erosion sites and engineering plans for each site's remediation
4) a Merrymeeting Lake shoreline survey
5) a complete review of the area's natural resource inventory
6) a septic system inventory
7) a complete review of the history of the watershed

Members of the Alton Conservation Commission have participated in this effort from the beginning, and the Commission has complete confidence in the quality and accuracy of the MMWMP, its recommendations and conclusions. The Commission is also confident of the conclusions of the NH Department of Environmental Services report from 2009, the Assessment of Chlorophyll-a and Phosphorus in NH Lakes for Nutrient Criteria Development, which states on page 10 " ... the criteria for median phosphorus in lakes should be between 7.0 and 10.0 ug/L."

The Powder Mill State Fish Hatchery is responsible for polluting the Merrymeeting River (MMR) and causing the downstream ponds in New Durham, Marsh, Jones, and Downing, to be classified as impaired for cyanobacteria and associated hepatotoxins, via designation on the 303 (d) list. They are all impaired for Primary Contact Recreation. This impairment was caused by the PMSFH through its discharge of the pollutant, phosphorus, in concentrations and annual loads so high that the Merrymeeting River underwent severe degradation during the seventy-plus years that the hatchery has been in operation. The Merrymeeting River and marsh downstream from Downing Pond and located primarily in the Town of Alton is not yet designated as impaired. The results of water sampling as reported in the MMWMP show that it is being damaged by the excessive phosphorus and other pollutants flowing into it from New Durham.

The Merrymeeting River and Lake Lake Loading Response Model Report prepared in May of 2019 for the CMSC, concluded that " ... the Merrymeeting River downstream from the Lake has degraded water quality (Figure 12) primarily from one point source, the Powder Mill Fish Hatchery." The degradation is not limited to cyanobacteria and related hepatotoxins, but includes aquatic vegetation and invasive species. The Merrymeeting Marsh in Alton has become severely impaired by rampant vegetative growth, and the Town of Alton has been attempting to control infestations of variable milfoil in the lower reaches of the Merrymeeting River. These infestations are only aggravated by the excessive amount of phosphorus and nitrogen polluting the river.

The MMWMP's Statement of Goal, page 2, Objective 3, is to " ... improve the water quality of the Merrymeeting River as it enters Alton Bay to meet an annual and monthly average of 10 ppb for total phosphorus". The Alton Conservation Commission approves of this goal as being appropriate to protect not only Alton Bay of Lake Winnipesaukee, but the Merrymeeting River and marsh in Alton from further degradation and pollution. The research, sampling, and testing done to prepare the MMWMP and its associated documents support the Commission's conclusion.

The Alton Conservation Commission finds no scientific support for the draft NPDES permit number NH 0000710 to call for allowing the Powder Mill State Fish Hatchery to discharge

25ppb of phosphorus into the Merrymeeting River and Alton Bay. The Commission therefore requests that the final permit allow no more than l0 ppb of phosphorus to be discharged at any time, with an annual cap of no more than 189 pounds of P. The Alton Conservation Commission strives to do the best that we can for the protection and enhancement of our natural environment. We expect no less from the U.S. Environmental Protection Agency.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4.

The comment references conclusions of a 2009 NHDES Report, which states on " ... the criteria for median phosphorus in lakes should be between 7.0 and 10.0 ug/L." *See* AR-105 p. 10. However, the 2009 Report also concluded that the reference condition approach (used to calculate the target range of 7 to 10 µg/L) is not the best way to define nutrient criteria for lakes because defining a range as the midpoint of the TP distribution from reference lakes is not specifically related to the support of designated uses and is critically linked to the definition of a "reference" lake. *See id*. p. 11. The Report identified these ranges as "very conservative" when compared to the distributions of phosphorus concentrations in New Hampshire lakes. *See id*. p. 17. NHDES identified the 75th percentile of the distribution for phosphorus concentrations (12.5 µg/L) as a more appropriate criteria for the maintenance of designated uses. *See id*. This value is consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire, and which NHDES has typically used to develop TMDLs in lakes with phosphorus-related impairments. *See* AR-80 p. 65, AR-7. The TP limits in the Final Permit were designed to control the discharge of TP in the effluent such that the TP concentration will be at or below NHDES's target in-lake concentration of 2 µg/L. *See* Response to Comment VI.2.

XI. Comments from Ms. Patricia Tarpey of the Lake Winnipesaukee Association

Thank you for the opportunity to provide comment on the draft permit for the Powder Mill State Fish Hatchery (PMSFH) in New Durham, NH. As the organization whose mission is to protect the natural resources and water quality of Lake Winnipesaukee, the state's largest freshwater body, we have been working diligently with communities around the lake for the past 10 years to address excessive nutrient loading to the lake. The Lake Winnipesaukee Association has developed four sub-watershed management plans for the lake, and we are currently working on one for Moultonborough Bay. We have been very interested and involved in the development of

the management plan for the Merrymeeting Lake and River watershed as it is the largest inflow of water to Alton Bay, Lake Winnipesaukee.

I have reviewed the draft permit, including the Fact Sheet and Appendices, the Merrymeeting River and Lake Watershed Management Plan, the nutrient modeling, water quality data, and antidegradation provisions in the New Hampshire Surface Water Quality Regulations, and have several comments and questions. It is clear that the PMSFH has been in violation of both the letter and the spirit of the Clean Water Act for decades. These violations have caused significant harm to downstream waters and threaten their long-term viability as recreational areas enjoyed by hundreds of people each summer, but more importantly, pose a human health threat due to frequent occurrence of cyanobacteria blooms. Therefore, the LWA believes that the NH Fish & Game should be required to cease operations at the hatchery until operation of the facility can ensure compliance with NH Surface Water Quality Regulations and the Clean Water Act. Appendix D provides the rational and process used by USEPA for setting the permitted effluent discharge limits for the PMSFH. On page 66 of Appendix D, it states in the first paragraph:

> *A NPDES permit must include any water quality-based limitations necessary to ensure compliance with water quality standards of the state, including narrative criteria, where the pollutant discharge is to occur. 33 U.S.C. Parts 1311(a), 1342 and 40 C.F.R. && 122.4(d), 122.44(d)(1)(i) & 122.44(d)(1)(vi). New Hampshire has established a series of use-specific assessment criteria to identify and list waters for impairment of designated uses under Sections 305(b) and 303(d) of the CWA. The Merrymeeting River is not listed as impaired in the final New Hampshire Year 2016 Surface Water Quality List ("303(d) List") as a Category 5 "Waters Requiring a TMDL" for the Primary Contact Recreation designated use. The Primary Contact Recreation designated use is also listed as impaired for Marsh Pond in the Draft 2018 303(d) List.*

The NHDES has issued a status update to the Draft 2018 303(d) list as of 1/21/20. In the status update, Marsh Pond is listed for potentially not supporting aquatic life integrity for the following parameters—chloride, chlorophyll-a, dissolved oxygen saturation, dissolved oxygen, pH, total phosphorus (TP), and turbidity. In addition, Marsh Pond is listed as impaired for primary contact recreation, Category 5-M, for cyanobacteria hepatotoxic microcystins. Jones Dam Pond is listed as impaired for the aquatic life integrity use, Category 4C-M, and listed as impaired for primary contact recreation, Category 5-M, for cyanobacteria hepatoxic microcystins. (https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/documents/2018-status-of-each-assessment-unit.xlsx).

Establishment of the effluent discharge limits for the PMSFH should be based on the updated status of the Draft 2018 303(d) list for several reasons. First, the impairments will be listed in the Final 2018 303(d) list and will also be listed in the Draft 2020 303(d) list. Secondly, as the Compliance Schedule in the Draft permit for the PMSFH is allowing a 5-yr. period for the construction of the new facility in order to comply with the permitted effluent discharge limits, at the earliest the facility may be ready by 2025, and the impairments will be well documents by that time. Finally, the proposed effluent discharge limits for total phosphorus were developed based on achieving a target in lake TP of 12 ug/L in Marsh Pond, as NH has not set nutrient

criteria for the primary contact recreation use (Appendix A of the Phillips Pond TMDL). Appendix A of the Phillips Pond TMDL states there are several approaches for deriving TP target values; one of them being the use of nutrient levels for commonly accepted trophic levels. As NH has set nutrient criteria for the Aquatic Life Use for trophic levels, these nutrient criteria should be used in developing a target in-lake TP concentrations for Marsh Pond as Marsh Pond is listed as potentially not supporting aquatic life integrity for total phosphorus. Sufficient monitoring data has been collected over the past few years to document the impairments of Marsh, Jones, and Downing Ponds.

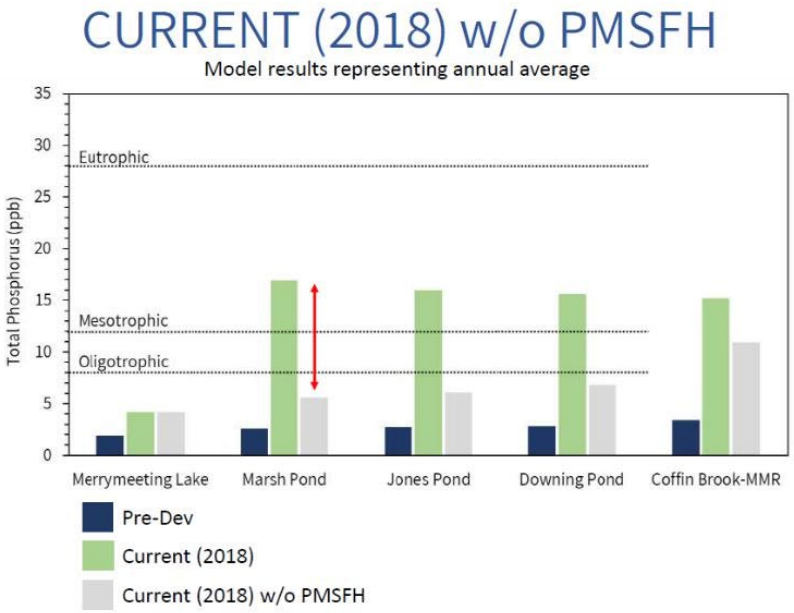
The EPA selected the permitted effluent discharge limits based on achieving a target in-lake TP concentration of 12 ug/L in Marsh Pond, the first downstream waterbody from the PMSFH (Appendix D). The NHDES numeric criteria for an oligotrophic lake or pond is 8.0 ug/L TP, mesotrophic lake or pond is 12 ug/L TP. In the Merrymeeting River and Lake Watershed Management Plan (MMRL WMP), it states:

> "At a minimum, these ponds should exhibit mesotrophic conditions or better without the influence of the hatchery. It was agreed on by the Water Quality Goals Committee, which included NHDES representations, that Marsh, Jones, and Downing Ponds should be considered mesotrophic." (page 26)

If one agrees that Marsh Pond should be considered mesotrophic, then the target in-lake TP concentration should be at most be 10.8 µg/L in order to comply with the Standard Operating Procedures for Assimilative Capacity Analysis for New Hampshire Waters (Guidance for Developing Watershed Management Plans in New Hampshire). The antidegradation provisions of the NH Surface Water Quality Standards (Env-Ws 1705.01) require that, at a minimum, 10% of the total assimilative capacity of any waterbody must be held in reserve. Selection of a target of 12 µg/L for Marsh Pond does not meet the antidegradation provisions.

It can also be argued that the trophic class for Marsh Pond would be oligotrophic, if not for the decades of excessive nutrient loading from the PMSFH. The Lake Loading Response Model used in the MMRL WMP modeled pre-development, current, and future conditions for Marsh Pond without input from the PMSFH.

Modeling performed by FB Environmental for the MMRL WMP shows that Marsh Pond was oligotrophic under natural or pre-development conditions and would be oligotrophic under current conditions without the nutrient inputs from the PMSFH.



Based on the volume of water estimated to enter Marsh Pond from the Hatchery (8,462,614 m^3), and using the annual average TP concentration of 4.2 µg/L for Merrymeeting Lake, would result in a total annual load of 36 kg TP to Marsh Pond without the fish hatchery. This would require a reduction of 342 kg/yr TP (90%) from the PMSFH, and if met would result in full compliance with the Clean Water Act.

The goal stated in the MMRL WMP is to achieve an in-lake TP of 10 µg/L for Marsh, Jones, and Downing Ponds, which would require a load reduction of 293 kg from the PMSFH, a 78% reduction. The draft permit target of 12 µg/L is estimated to require a reduction of 166 kg/yr and reflects a 44% reduction in the existing load from the Hatchery. This is far from adequate, and represents a continued violation of the Clean Water Act.

Due to the decades of discharge from the PMSFH, which have caused a violation of the water quality standards, have included substances in kind or quantity that settle to form harmful benthic deposits, have resulted in foam or scum and other visible substances, produced odors, color, turbidity that is not naturally occurring, and have rendered the downstream water bodies unsuitable for their designated uses, the EPA draft permit should set effluent discharge limits as stringently as possible, and developed to meet the natural conditions of Marsh Pond without influence/impact from the PMSFH. Since NH Fish and Game will be constructing a new facility to meet the NPDES permit limits, why not build it to remove as much TP, Nitrogen, and TSS as technologically possible?

The Lake Winnipesaukee Association also has concerns with the fact that the permit does not set limits on nitrogen or TSS. The relationship between phosphorus nitrogen ratio in plant and algal growth has been well documented in the scientific literature. Effluent limits should be set for Total Nitrogen in consideration of the limits set for Total Phosphorus. The sediment deposits that

have built up on the bottom of Marsh, Jones, and Downing Ponds have contributed to the dissolved oxygen impairment, and the internal loading in these waterbodies. A lifelong resident of New Durham commented that Marsh Pond used to have a clear, gravel bottom; now it has 2-3 feet of organic muck.

On page 28 of the MMRL WMP, it states:

> "Internal loading is also a concern given that low dissolved oxygen in bottom waters of Marsh and Jones Ponds is causing a significant release of phosphorus from bottom sediments (as evidenced by the large difference between bottom and surface phosphorus concentrations). Low flushing rate in late summer may further exacerbate internal loading as both the duration of anoxia and the residence time for nutrients are prolonged. The percent contribution of internal phosphorus load to Marsh and Jones Ponds (relative to other sources) will be more significant when the point source load from the Powder Mill State Fish Hatchery is remediated; **future internal load from legacy point source loading will also continue to be a significant source despite remediation** and may need to be addressed separately."

The draft permit should address remediation of internal loading from the bottom sediments of Marsh Pond and should set discharge limits for TSS to prevent the continued buildup of bottom sediments that will contribute to future internal load.

Furthermore, we have significant concerns for the compliance schedule outlined in the Draft Permit. What is the time -frame for the permit? The compliance schedule specified in the draft permit allows 5 years for the construction of the new facility in order to meet the effluent limits for TP. What happens at the existing facility during this 5-yr. period? The 2011 NPDES permit had no effluent discharge limits for TP – does this mean the facility can continue to pollute the downstream waters for the next 5+ years until the new facility is built? How often is a new permit required?

In summary, these are our main concerns/comments:

- The PMSFH has been in violation of the Clean Water Act for decades. These violations have caused significant harm to downstream waters and threaten their long-term viability as recreational areas, but more importantly, pose a human health threat due to the frequent occurrence of cyanobacteria blooms.
- The rational for selection the in-lake TP target for Marsh Pond should be based on the numeric criteria established for the aquatic life use and based on trophic classification.
- Trophic classification for Marsh Pond would be oligotrophic without the nutrient loading from the PMSFH, and in-lake TP would be ~ 6.0 ug/L
- The MMRL WMP used a mesotrophic classification for Marsh Pond. At a maximum, the target in-lake TP concentration used by USEPA to develop effluent discharge limits for TP from the hatchery should be 10.8 ug/L to comply with the antidegradation provisions of the NH Surface Water Quality Standards (Env-Ws 1705.01).
- The residents of New Durham and Alton have set a water quality goal of 10 ug/L for Marsh, Jones and Downing Ponds. The permit should set effluent discharge limits to

meet the water quality goal stated in the management plan or better. The people of these two communities have invested a great deal of time, effort, and financial resources to develop a science-based management plan to protect their water resources. The State of NH should not be allowed to ignore the rules and laws established by the State to protect water resources.

- Requiring only a 44% reduction in nutrient loading from the PMSFH results in continued violation of the Clean Water Act.
- Effluent discharge limits need to be set for Total Nitrogen and TSS
- The Compliance Schedule specified in the draft permit is too long. No conditions and permitted effluent discharge limits have been set for the interim period until the new facility is constructed. This is unacceptable—the nutrient and TSS loads discharged from the hatchery until the new facility is in operation compliance.
- The Merrymeeting Lake Watershed is the largest contributing inflow to Alton Bay, Lake Winnipesaukee. Therefore, the continued permitted pollutant loading in this watershed ultimately impacts Lake Winnipesaukee, which is classified as an oligotrophic (high quality) waterbody.

EPA Response

For the Final Permit, EPA considered the 2018 303(d) list for the Merrymeeting River and associated waterbodies. *See* Response to Comment III.2.0. EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. *See* 2019 Fact Sheet p. 25 and Response to Comment III.2.0. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The appropriate classification for the receiving water is mesotrophic. See Response to Comment III.2.1 for a detailed discussion of trophic classification. EPA addresses detailed comments on water quality standards, including the applicability of New Hampshire's antidegradation provision, in Response to Comment III.2.0. To the extent the existing discharge causes or contributes to a violation of water quality standards, the proper mechanism to address it is a water quality-based effluent limitation pursuant to Sections 301 and 402 of the CWA.

The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit, which are more stringent that the limits proposed in the Draft, will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, including consideration of the recommended TP limits in the 2019 WMP, see Responses to Comments III.2.1 and VI.2. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4.

Finally, EPA addresses similar concerns about the compliance schedule in Response to Comment III.7. The Agency has determined in its discretion to remove the compliance schedule in the Final Permit and, as advocated in comments submitted on the Draft Permit, will address

the Facility's expected inability to meet the final, numeric TP limits through use of its enforcement authority. At present, EPA expects to include a schedule for completing necessary treatment/design upgrades in an administrative order. *See* CWA Section 309(a). EPA anticipates such an order containing both interim planning/design/construction milestones, such as those contained in the Draft Permit, as well as interim TP effluent limitations. *See* Response to Comment VI.5. EPA believes addressing the Facility's ability to meet the new TP limits through an enforcement action with interim TP limits is an appropriate approach that will result in meaningful TP reductions until such time as new treatment is constructed. EPA does not view requiring the facility to cease operations until new treatment is online as a necessary step at this time.

XII. Comments from Ms. Jillian Eldridge, Executive Director of Moose Mountains Regional Greenways

We are providing comments on behalf of Moose Mountains Regional Greenways (MMRG), the primary conservation organization and land trust serving the town of New Durham and surrounding area. The Board of Directors of MMRG is alarmed that water quality in the Merrymeeting River has deteriorated significantly over the past decade, even while we have worked diligently to conserve from development over 2,000 acres of land within the Merrymeeting River watershed. Based on data provided by the New Durham/ Alton Cyanobacteria Mitigation Steering Committee (CMSC) and others, it is clear that the Powder Mill Fish Hatchery has been determined to be the single major source of phosphorous and nitrogen pollution to the river in New Durham.

We are indebted to the many volunteers who have spent countless hours taking water samples, compiling data, doing research, exploring and mapping the river in an effort to quantify pollutant sources and develop a Watershed Management Plan for the Merrymeeting River. It is clear from this effort that all other measures to reduce pollution in the river would be insignificant in comparison to tighter restrictions on pollutant discharges from the Fish Hatchery. We concur with the recommendations of the Cyanobacteria Mitigation Steering Committee and its consultants that the Fish Hatchery discharge be limited to no more than 10 micrograms/liter (ug/L) of phosphorus, with a total phosphorous loading of less than 189 lbs/year. Commensurate efforts to reduce amounts of suspended solids and nitrogen into the Merrymeeting River must also be undertaken.

We feel that the Draft permit allowing the discharge of 25 ug/L, phosphorous October-May and 14 ug/L June-September is unacceptable, given the significant degradation of the ponds below the fish hatchery in New Durham, which already contained highly elevated phosphorous concentrations in sediment. With these weak discharge limitations, there is a high probability of the demise of the entire marsh and river system below the ponds, and we expect that degradation will continue downstream to Alton Bay and Lake Winnipesaukee.

We urge you to set stricter discharge limitations than those proposed in the Draft permit. The recommendations of the CMSC are based on sound scientific study as part of the development of

the Watershed Management Plan for the Merrymeeting River and represent the appropriate level of allowable discharges from the fish hatchery. Thank you very much for your consideration.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4.

XIII. Comments from Mr. Michael Gelinas

I have lived in New Durham for 66 years. I live within two miles of all the affected waterbodies in the area and want my children and grandchildren to safely enjoy the Merrymeeting river system. I have three children, and I also have nine grandchildren. Growing up in New Durham, I enjoyed many recreational activities in Merrymeeting Lake, Marsh Pond, Jones Pond, and Downing Pond on a regular basis. I often swam, kayaked, in and around the waterbodies. I spent most of my summers either on the water or hanging out by the water. I also spent time fishing on Merrymeeting Lake, Marsh Pond, Jones Pond, and Downing Pond. I would usually fish for catfish and enjoyed cooking and eating the fish. For the last three years, I have spent around 100 hours a year conducting water quality testing because I am dedicated to improving the water quality.

In 2015 and 2016, Downing Pond had major cyanobacteria blooms that were very visible. I could not believe the new plant growth (cultural eutrophication) when I started testing. In 2015, a New Durham selectman reached out to me and asked me to start doing water quality testing and to help identify the source of the cyanobacteria problem. I have been doing this water quality work ever since 2015, I am concerned about the health (cultural eutrophication) of the Merrymeeting waterbodies. I was trained by Bob Craycraft from UNH to be a lay lakes monitor. I started by testing the water in Downing Pond and followed the source of total phosphorus upstream to the Powder Mill Fish Hatchery. I also conducted water quality testing in Marsh Pond, Jones Pond, Downing Pond, and on the Merrymeeting River. When I started testing in Downing Pond, the inlet water had the highest TP, so I tested further up the River and saw an increase in total phosphorus starting at the Powder Mill Fish Hatchery.

The following is based on info from EPA draft permit and/or MERRYMEETING RIVER & LAKE WATERSHED MANAGEMENT PLAN (WMP).

- Marsh's pond most sensitive time of year (summer), when conditions most favor the growth of algae, includes May, algae growth starts in May.

- Any treatment system designed to treat the seasonal load (September is highest), could easily treat discharge to the seasonal concentration levels for the off-seasonal months.

- Without the discharge from PMSFH, Marsh pond would be almost as clear as Merrymeeting Lake. Marsh pond would have the same lake trophic level as Merrymeeting Lake.

- The flow into Alton bay within 1000 feet of the town beach. The goal for swimming in NH is 12 ug/L total phosphorus, that area of the Bay is higher. 28% of the total phosphorus comes from the PMSFH. Any decrease in the PMSFH discharge level will help the Alton town beach water quality.

- Without the discharge from PMSFH, Marsh pond the total phosphorus would be lowest in the summer, however the PMSFH discharge make it 3 times higher when landowner most want to use it for swimming.

- In 1938, before the fish hatchery, 10% of the bottom was gravel of Marsh Pond, now after 70 years of untreated discharges, from the fish hatchery, there is 2 to 3 feet of silt/muck (Benthic Deposits) over what was once gravel in Marsh pond. The Benthic Deposits starts right below the hatchery.

1. There is reasonable potential, the discharge will cause violations of the water quality standards of the receiving water for the next five years. Draft permit Page 10 part I.A.4.

- Interim Total Phosphorus Requirement (first 60 months from the effective date of the permit, report only) Table 3-8.pg. 26 WMP
- Assimilative capacity (AC) analysis results for Marsh Pond, Total Phosphorus Parameters in WMP pg. 26
    - Assimilative capacity Threshold (10.8 ppb)
    - Existing Median Water Quality (43.1 ppb)
    - Remaining Assimilative capacity (-32.3 ppb)

For the PMSFH to continual to discharge at 4 times the Assimilative capacity is unacceptable, the PMSFH and Marsh pond must share burden, the PMSFH discharge should be reduced from 4 times the Assimilative capacity to 2 time the Assimilative capacity. The interim treatment system, attention to BMP and greater fish reduction maybe needed to meet this goal.

2. There is reasonable potential, the new permit will allow discharges that are not free from substances in kind or quantity that settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities. Draft permit Page 10 part I.A.5

- An in-lake concentration of 12 ug/L TP in needed to insure suitable for its designated uses.

There is reasonable potential for failure, if the PMSFH output monthly average is 14 ug/L. The WMP shows that Marsh pond waters head without PMSFH adds 2 ug/L to the in-lake TP concentration of Marsh pond. So that 2 ug/L added by Marsh pond, plus the projected 14 ug/L the EPA recommends would yield an in-lake TP concentration of 16 ug/L, with no dilution, so how could it be possible maintain 12 ug/L in Marsh pond during (natural/manmade) Critical Conditions (September). Due to Marsh pond's unique watershed, consideration must be given as to when the target in-lake TP concentration of 12 ug/L is formed, to ensure the validity of its "worst-case" effluent flow assumption and load.

3. There is reasonable potential, the discharge will result in benthic deposits that have a detrimental impact on the benthic community. Draft permit Page 10 part I.A.8

- The discharges will result in benthic deposits that have a detrimental impact on the benthic community, as demonstrated by annual summer anoxic state in Marsh and Jones pond.
- The maximum daily total suspended solids (TSS) value is a benchmark, not an effluent limitation.
- The PMSFH discharges effluents, at relatively low concentrations of nutrients, with the large quantities of water they discharge, produces a total load greater than the receiving waters can handle.

Env-Wq1703.08 Benthic Deposits. (b) Class B waters shall contain no benthic deposits that have a detrimental impact on the benthic community, unless naturally occurring. In 1938, before the fish hatchery, 10 % of the bottom was gravel of Marsh pond, now after the fish hatchery there is 2 to 3 feet of Benthic Deposits over what was gravel in Marsh pond and the Benthic Deposits starts right below the hatchery.

4. There is reasonable potential, Env-Wq1708.02 Applicability of Antidegradation should now apply because of the increased point source discharges of pollutants from the PMSFH. In 2018 the TP load discharged was 132% above the load of 2015.

5. There is reasonable potential, the PMSFH operation (discharges) violate NH 1703.01. (P6 and P23 of 75) 1703.01(b) & (c). Class B waters, such as the Merrymeeting River, shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring, and existing discharges containing phosphorus or nitrogen, or both, which encourage cultural eutrophication shall be treated to remove the nutrient(s) to ensure attainment and maintenance of water quality standards.

PMSFH discharges cause,

- MARSH, Jones and Downing pond are all listed on 303(d) list.
- MARSH, Jones and Downing pond also became hypoxic or anoxic from June-September each of each year tested, started (2016).

- Excessive plant growth, especially filaments green algae and variable milfoil , have been reported

6. There is reasonable potential, the PMSFH improvements approved by the EPA and changes in BMP caused degradation by:

- Going from 10 outfalls to 2 outfalls increased the flow which cause better mixing of solids/nutrients. Before this action they would collect in piles and block the outfalls.
- Vacuuming breaks down the solids, making phosphorus soluble.
- Constructing the new intake system, lowering the intake level (cooling the water) and increased flow.

There has been steady degradation in water quality and existing uses to the point, all tested site on the Merrymeeting river system in New Durham are impaired. The only major change in the watershed were at the hatchery. All the EPA required improvements protected the Hatchery only, no action were taken to protect the river from these changes, and the Merrymeeting river paid the price.

7. There is reasonable potential, the Effluent Limitation (Total Phosphorus (October –May) 25 µg/L lbs./d (June –September) 14 µg/L ug/L will not meet the in-lake goal of 12 ug/L during Critical Condition

- The PMSFH discharge limitations for TP needs to be 10 ug/L. in September to ensure the validity of its "worst-case" effluent flow assumptions
- WMP (page 2 Objective 2): Improve the water quality of Marsh, Jones, and Downing Ponds to meet an annual and monthly average of 10 ppb for in-pond total phosphorus by reducing 646 lbs. P/yr (78%), under new permit the PMSFH, still need a reduction of 212 lbs. P/yr (26%).
- Due to Marsh pond's unique watershed, consideration must be given as to when the target in-lake TP concentration of 12 ug/L is formed, to ensure the validity of its "worst-case" effluent flow assumption.

There is reasonable potential for failure, if the PMSFH TP effluent monthly average limitation is 14 ug/L. The WMP shows that Marsh pond (without PMSFH) adds 2 ug/L to the in-lake TP concentration of Marsh pond. So that 2 ug/L added by Marsh pond, plus the projected 14 ug/L the EPA recommends would yield an in-lake TP concentration of 16 ug/L, with no dilution, how could it possible maintain 12 ug/L in Marsh pond during (natural/manmade) Critical Conditions (September).

8. There is reasonable potential, Effluent Limitation (Annual Total Phosphorus Load of 395 lbs./year will not meet the in-lake goal of 12 ug/L during Critical Condition and will causes "significant degradation" of the receiving water.

- 395 lbs./year will not meet WMP goal (WMP page 2 Objective 2) of reducing 829 lbs./year by 78% to 183 lbs./year.
- 395 lbs./year will cause "significant degradation" of the receiving water. To be Insignificant pollutant loading, (the intake water from Merrymeeting lake at 119 lbs./y),

plus 20% of the Remaining assimilative capacity for Marsh pond, 75 lbs./year. To cause an Insignificant pollutant load, the max discharge by the PMSFH is 194 lbs./yr.

There is reasonable potential for failure, if the PMSFH Annual Total Phosphorus Load is 395 lbs./year, not only does it not meet WMP goals of 183 lbs. a year, will cause "significant degradation" of the receiving water

9. There is reasonable potential, the Effluent Limitation (Seasonal Total Phosphorus Load (June –September) of 87 lbs/season will not meet the in-lake goal of 12 ug/L during Critical Condition and causes "significant degradation" of the receiving water

- Same as 6 and 7 above.

10. There is reasonable potential, the PMSFH failed to, properly operate, maintain and implement any level of Quality Assurance/Quality Control practices the systems of Solids Control treatment. (Their own testing (EPA EHCO) and the river are the best proof of failing).

From 2015 to 2018 there was an 132% decrease in TP removed by PMSFH resulting in degradation of the Merrymeeting river system in New Durham which includes Marsh, Jones and Downing pond. This shows insufficient attention was paid to effluent management. This resulted in degradation of the Merrymeeting river system in New Durham which includes Marsh, Jones and Downing pond. Within a few percentage points the annual fish food feed was the same from 2015 to 2018, however the PMSFH TP discharge increased by 132%.

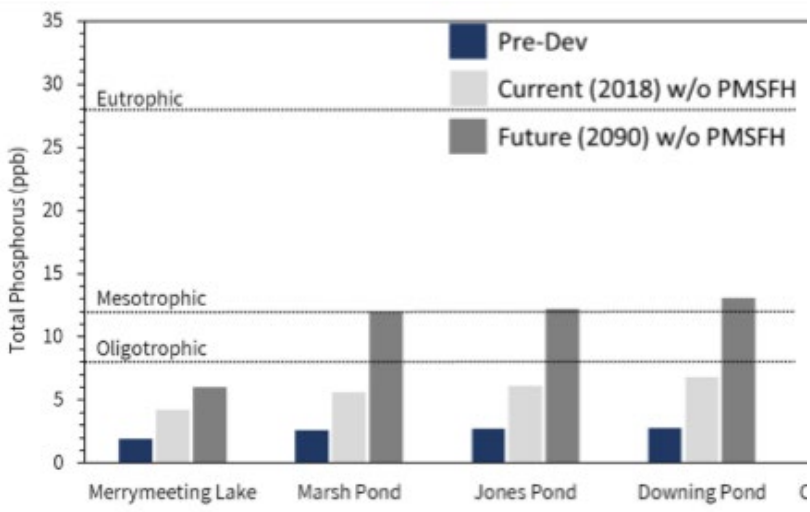
EPA ECHO DATA FROM PMSFH	2015	2016	2017	2018
TP discharged in lbs./year	583	688	983	1354
% of TP after 2015		18	69	132

The 2018 the discharge of 1354 lbs/year TP, show a complete lack of treatment, record keeping and Q/A and Q/C, as this is over the total discharge (based on fish feed used). This shows a complete breakdown in solids control management. This also shows insufficient attention was paid to effluent management to the point of it being willful/malicious. This clearly shows there was no Quality/Assurance and no oversite. The backsliding resulted in degradation of the Merrymeeting river system in New Durham which includes Marsh, Jones and Downing pond.

For each of these reasons, feed management and settling technology are not enough to control nutrient discharges. PMSFH discharges have always caused "significant degradation" and even with the new permit limits set they will cause "significant degradation".

[11.]10. There is reasonable potential, Wrong/misleading statements (NPDES Permit No. NH0000710 2019 Fact Sheet Page 28-31 of 75) In 2018 the TP concentrations in Marsh were over 28 ug/L 50% of the time, this is not exactly occasionally.

[12.]11. Marsh's pond, if not for PMSFH, clearly would be Oligotrophic (WMP 6 ug/L), the permit use Eutrophic standards, this is mis[s]leading and misses the point on what Marsh pond naturally would be Oligotrophic, currently without pollution from PMSFH.



Marsh Pond to be less than 12 ug/L based on best possible data, low flow and Env-Wq 1702.15.

Max concentration of TP	12 ug/L
Less Marsh pond w/o PMSFH load	6 ug/L
Projected remaining assimilative capacity	6 ug/L

Over 20% of 6 ug/L, Projected remaining assimilative capacity is consider[ed] a significant lowering of water quality. Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring. Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, sh[a]ll be consider[ed] a significant lowering of water quality.

Insignificant pollutant loading
Insignificant pollutant loading is defined as a discharge or activity that is projected to utilize less than 20 percent of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity. In most situations insignificant discharges are acceptable.

Insignificant pollutant loading entering Marsh pond, based on the WMP (pages 28 to 30).

1. 2018 (most Current) in-lake TP concentration to Marsh pond w/o PMSFH is 6 ug/L
2. 2018 (most Current) in-lake TP load to Marsh pond w/o PMSFH 375 lbs.
3. Remaining assimilative capacity for Marsh pond is 6 ug/L and a yearly load 375 lbs. TP.
4. Insignificant pollutant loading, 20% of 375 lbs. is 75 lbs. TP/year Marsh pond max load 450 lbs.
5. The intake water from Merrymeeting lake adds 119 lbs./y and the PMSFH can add a max of 75 lbs./year. The max total discharge by the PMSFH is 194 lbs./yr
6. With 194 lbs./year, the hatchery discharge would average 16 lbs./month. For the Marsh pond Critical Condition TP IN/POND concentration (in September) to be less th[a]n 12 ug/L, the PMSFH discharge needs to be 10 ug/L. to ensure the validity of its “worst-case” effluent flow assumptions.

Notes
1. September values are 2 ½ time higher than June and the flows are lower (most critical condition).
2.The max concentration of 10 ug/L TP was set by WMP, and the above numbers confirm the need for 10 ug/L

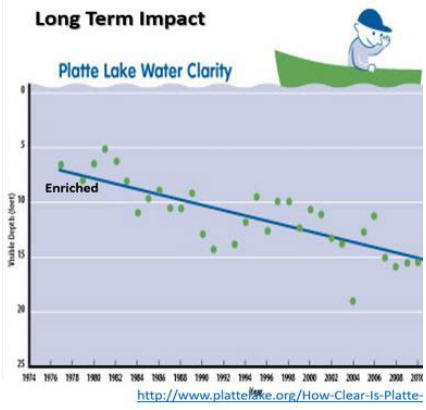
Using 10 ug/L effluent limitation

1.The max PMSFH output monthly average is 10 ug/L. With no equipment or personal added
2.Effluent Total Phosphorus (June –September), (Critical conditions)

A. The max PMSFH output monthly average 10 ug/L.
B. Seasonal Total Phosphorus Load (June –September) was 87 lbs/season. Under new proposal the load would be 60 lbs/season.
C. Annual Total Phosphorus Load was 395 lbs/year, would be 180 lbs/year at an average concentration of 10 ug/L.

It is the load that is important, this proposal greatly reduces the load going to Alton bay/Winnipesaukee. It need no change in design or # of personal. The only added cost is more chemicals and some electricity (cost of do business).

This proposal will start us down this path to the Best available technology (BAT) and represents the best economically achievable performance of facilities



The point of the below table is to show June is only removing 10% (8 lbs.) of what is removed in September. It is the load that is important. The load could be greatly reduced without a change in design or # of personal, the only added cost is more chemicals and some electricity (cost of do business). This proposal greatly reduces the load going to Alton bay/Winnipesaukee. Changes need to be made to the permit to start down the path to the Best available technology (BAT) and the best economically achievable performance of facilities.

yearly total TP (829 lbs.)	precent of TP load	lbs. by permit	TP load /month lbs.	TP load removed	
sept	15	33	124	91	
June	5	33	41	8	

The point of the below tables is to show the different between EPA permit and WMP goals.

total phosphorus load base on permit				% Based on 2018 fish food									
	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec	
% of total P load	6	6	6	6	11	5	7	10	15	13	9	6	
TP lbs/monthly at permited ug/L limits and 6 MGD flow *	38	38	38	38	38	22	22	22	22	39	39	39	395
ug/L based EPA permit	25	25	25	25	25	14	14	14	14	25	25	25	

total phosphorus load base on WMP goals				% Based on2018 fish food									
	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec	
% of total P load	6	6	6	6	11	5	7	10	15	13	9	6	
lbs/monthly at 10 ug/L and 6 MGD flow	15	15	15	15	15	15	15	15	15	15	15	15	180
ug/L based on WMP goals	10	10	10	10	10	10	10	10	10	10	10	10	

Additional support images in the original comments file. *See* AR-106.

EPA Response

First, EPA thanks Mr. Gelinas for his role on the Cyanobacteria Mitigation Steering Committee and his dedication to the collection and analysis of water quality data on the Merrymeeting River and downstream ponds, which have informed the development of the Draft Permit and the decisions on the Final Permit documented in this Response to Comments.

EPA agrees with the comment that the effluent from PMSFH has caused or contributed to excursions of water quality standards in the Merrymeeting River and downstream ponds, including Marsh, Jones and Downing Ponds. In particular, the discharge of total phosphorus (TP) from the hatchery has contributed to the impairments of the primary contact recreation designated use due to cyanobacteria hepatotoxins microcystins. The 2019 Fact Sheet (p. 25) explains that the discharge of phosphorus from PMSFH has caused the Merrymeeting River and downstream waterbodies to experience severe degradation. EPA addresses comments about water quality impairments in the Merrymeeting River watershed and the appropriate trophic classification for the receiving water in Responses to Comments III.2.0 and 2.1.

It is not entirely clear why the conditions in the lakes have caused increased frequency of algal blooms to the point where NHDES has listed designated uses in Marsh, Jones Dam, and Downing Ponds as impaired due to the presence of cyanobacteria. Limited monitoring data suggests that Marsh Pond and Jones Dam Pond were likely eutrophic as far back as the mid-1980s. *See* AR-85. The comment suggests that recent changes at the hatchery, including reconfiguration of outfalls and changes in best management practices have caused the degradation, but EPA could find no evidence in the DMR data that there have been changes in pollutant loads since 2007. *See also* Response to Comment IV.1 and XVI. The estimated increase in TP load released in 2018 is based on single, unusually high TP value reported in December 2018, rather than any obvious change in operations or negligence from the Permittee. EPA responded to similar comments about estimated pollutant loads in Response to Comment VI.4 and VI.7.2, and VI.7.7. However, there is no question that the existing discharges from the hatchery is causing or contributing to the impairments of the downstream waters. Under NH water quality standards, assimilative capacity is the amount of a pollutant or combination of pollutants that can be safely released to a waterbody without causing violations of applicable water quality criteria or negatively impacting uses. Env-Wq 1702.03. As designated uses of

Marsh Pond, Jones Dam Pond, and Downing Pond are all impaired (i.e., water quality is below applicable standards), the waterbodies, by definition, have zero assimilative capacity. *See* AR-80, p. 35. In addition, there is no dilution available at PMSFH because, at times, all of the water from Merrymeeting Lake to the Merrymeeting River flows through the hatchery. The numeric TP limits in the Final Permit reflect these realities and are designed to reduce the TP released from the hatchery such that the discharges meet applicable water quality standards.

The comment suggests that the hatchery can make operational changes and more to achieve the Best available technology (BAT) and the best economically achievable performance of facilities. EPA addresses comments on how technology-based effluent limitations are established in Response to Comment III.2.1. In this case, EPA is not free to impose a more stringent TBEL that is directed by the promulgated effluent limitations guidelines for this point source. However, that does not mean EPA cannot or should not impose more stringent effluent limitations based on *water-quality* considerations. *See* CWA Sections 301, 402. Indeed, that is exactly what EPA has done here. For discussion regarding the total phosphorus limits contained in the final permit and compliance with water quality standards, see Response to Comment VI.2.

In response to this and similar comments on the Draft Permit, the Final Permit establishes year-round, water quality-based TP limits of 12 µg/L and an annual mass-based TP limit of 227 pounds. The revised, more stringent limits will ensure that TP concentrations in Marsh Pond are at or below a target in-lake concentration consistent with NHDES's approach to classifying and restoring mesotrophic lakes in New Hampshire. *See* AR-80 p. 65. In addition, an effluent TP concentration of 12 µg/L, is predicted to result in an estimated, annual average in-lake TP concentration less than 10 µg/L which is consistent with the in-lake TP concentration recommended in the comments and in the 2019 WMP. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2. The increased monitoring frequency in the Final Permit (from quarterly to weekly) will enable the Permittee to establish an accurate baseline for consideration of operational changes and treatment technologies to meet the final TP limits. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4.

XIV. Comments from Mr. Arthur Butt

The health of New Hampshire's rivers and lakes are in everyone's interests. As a new resident and former environmental regulator, I am concerned about excess phosphorus (P) entering the Merrymeeting River. This pollutant discharged from the Powder Mill Hatchery (PMH) is violating NH Water Quality Standards (Env-Wq 1703) by not supporting the designated uses and maintaining the biological integrity of its surface waters. Specifically, harmful blooms of toxic blue-green algae have been reported in Merrymeeting River. It is unacceptable that PMH has been allowed to depredate these waters, and new limits are needed to protect these waters from unnecessary pollution. The P-limits proposed in the draft NPDES Permit for the Powder Mill State Fish Hatchery are inadequate. New limits should be consistent with the recommendations of the Merrymeeting River & Lake Watershed Management Plan. As the primary governing agency, EPA should not permit the PMH to release wastewater with phosphorus levels higher than 10 ppb. In addition, these lower limits should take effect immediately, with a shorter construction schedule, in order to protect the health of downstream waters. The health of New

Hampshire's water bodies is very important to me and every resident of this state and to the many out-of-state visitors that come to enjoy our clean waters and the many natural resources that depend on clean waters.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4.

XV. Comments from Mr. Russell Vaiden

After attending the public hearing on the Draft NPDES permit for the Powder Mill Fish Hatchery, I am appalled at the apparent lack of concern demonstrated by the EPA panel. A preponderance of analytical work and information was put forth which shows clearly that the Fish Hatchery represents a clear and present ecological and biological hazard to not only the people of New Durham and Alton, but also to the greater community around Lake Winnipesaukee. Bear in mind that Laconia derives its drinking water from Lake Winnipesaukee as do other communities down the Winnipesaukee and Merrimac Rivers and permitting the continuation of Phosphorus and Nitrogen contamination from the fish hatchery is putting thousands of people at risk for cyanobacteria exposure.

Omitting Nitrogen from the discharge permit and placing weak limits on Phosphorous only serves to continue the pollution stream and does nothing to abate the problem. From the information presented, it is clear to me, at least, that the entire discharge area should be declared a CERCLA site and remediated IMMEDIATELY. The overabundance of cyanobacteria which has polluted the immediate outflow area of the hatchery and has been seen in Lake Winnipesaukee has to be eliminated, and that logically means that the hatchery MUST BE SHUT DOWN until adequate discharge controls are in place. 5 years of doing nothing until controls are marginally installed is contrary to the EPA's mission.

Please take into account that if this hatchery was a private entity and not a State Run Facility, the EPA would have shut it down years ago. Shut it down now or bear the brunt of causing the destruction of New Hampshire's premier recreational and financial resource and potentially the death of it's citizens.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2. EPA addresses comments on the discharge of TSS and TN in Response to Comments III.2.2, III.2.3, and VI.4. In response to this and similar comments, EPA is proposing to establish tiered, interim TP limits that require the Permittee to achieve incremental reductions during the period from the effective date of the permit until the Permittee achieves compliance with the water quality-based TP limits. *See* Response to Comments III.3 and VI.5.

Finally, the comment suggests that the discharge area should be "declared a CERCLA site and remediated immediately." The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was created to provide broad federal authority to respond directly to releases or threatened releases of hazardous substances. Hazardous substances include priority toxic pollutants listed in 40 CFR § 401.15 as well as substances designated in accordance with CWA Section 311(b)(2)(A) and listed at 40 CFR § 116.4. The extent to which this receiving water should be addressed via CERCLA is beyond the scope of this CWA permitting action. EPA notes that, even if cleanup under CERCLA was an appropriate regulatory framework for addressing the nutrient enrichment in the Merrymeeting watershed, remediation of a superfund site is a complex, multi-phase process that often takes decades or longer. Pursuing alternative pathways, such as through the CWA 314 process that the Town of New Durham initiated with its 2019 WMP, is likely a more direct and efficient way to improve the water quality in Marsh, Jones Dam, and Downing Ponds.

XVI. Comments from Mr. Paul Raslavicius

The proposed plan focuses on the control of the nutrient loading of the effluent from the Fish Hatchery with the resultant proliferation of cyanobacteria and subsequent marked degradation of the Merrymeeting River. The remediation of the current conditions is certainly a commendable action; however, it is a costly process requiring several years for full implementation.

The plan, as proposed, attacks the symptoms of the problem and not its underlying roots. Its proposed cure will take years to implement and is the costly way to deal with the problem. The current malady is a result of the decision less than a decade ago to permit a marked increase of the water intake capabilities from Merrymeeting Lake by construction of a new larger diameter intake pipe and at a greater depth (cooler water) than what had existed previously. Not only did

this permit a vast increase in fish production by the Hatchery; it also decreased the natural fish productivity of the Lake by increasing the water temperature at depth.

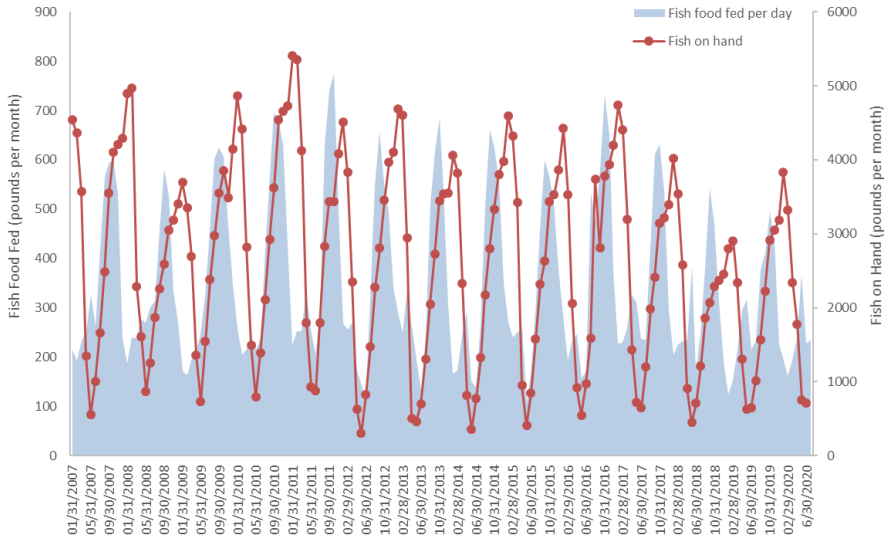
I ask for serious consideration of the immediate requirement of decreasing the water inflow to levels experienced before the expansion of the intake pipe with a concomitant decrease of the fish stock population. As the physical changes envisioned in the Plan take place and as the Merrymeeting River water quality improves increasing the water inflow to provide for a larger fish population may be considered.

Thank you for your attention and consideration.

EPA Response

Data reported in the monthly discharge monitoring reports does not support the argument that there has been a dramatic increase in either the biomass or the water use at the hatchery. The reported monthly average flow from January 2012 through May 2020 has remained relatively consistent over time and there is no indication that the Permittee has increased water withdrawals in recent years. *See* Response to Comment IV.1. Similarly, as illustrated in Figure XVI-1, below, there is no evidence from reported values that fish biomass or food has changed dramatically since 2007.

Figure XVI-1. Cumulative (both outfalls) reported average monthly fish on hand and fish food fed per day (pounds per day) from January 2007 through July 2020.



EPA continues to believe that control of algal growth, and particularly of cyanobacteria, will be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA and NHDES collaboratively determined that a numeric, water quality-based total phosphorus limit is necessary to meet water quality standards in the receiving water. The conservative, water

quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2.

XVII. Comments from Mr. Ted Carl

I would like to offer some comment. I am a resident of Alton Bay and a member of the local Milfoil Committee, and a prior chairman for seven years. I have watched this issue for the past year build to a crescendo of alarming proportions driven by a small group of people who want a mammoth federally funded response to a local issue. I have read every record of the committees meetings and responses. I am not a scientist and cannot speak the EPA jargon, but our local and state agencies have offered common sense, easily doable solutions to the phosphorus being discharged from the fish hatchery. This activist group has been disparaging those efforts and is seeking a massive solution to a small problem.

I believe the rhetoric coming from the Alton/New Durham group is calibrated to stir up an unwarranted frenzy over this issue. We all love our lakes and waterways and the Merrymeeting River in Alton is not under any development stress and has water readings consistent with historically good data. If solutions need to be found, I believe they can be found working cooperatively with our State Agencies and not creating an adversarial atmosphere. In my years working with the New Hampshire Department of Environmental Services I have found them to be competent and responsive to the needs of our town and its residents.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. EPA and NHDES collaboratively determined that a numeric, water quality-based total phosphorus limit is necessary to meet water quality standards in the receiving water. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. The conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2.

EPA notes the supportive comments regarding NHDES. EPA has collaborated closely with NHDES in issuing this permit.

XVIII. Conservation Law Foundation- Form Comments Submitted 156 Times

I care about the health of New Hampshire's rivers and lakes, and I am concerned about excessive phosphorus in the Merrymeeting River. Phosphorus pollution from the Powder Mill Hatchery has caused toxic blue-green algae outbreaks in the Merrymeeting River. It is unacceptable that Powder Mill Fish Hatchery has so severely degraded the health of the Merrymeeting River, and it is vital that the new limits are set strictly enough to enable it to recover. The phosphorus limits proposed in the draft NPDES Permit for the Powder Mill State Fish Hatchery are not adequately protective. The new limits need to be much stricter and should be consistent with the recommendations of the recently published Merrymeeting River & Lake Watershed Management Plan. And these more protective limits should take effect immediately, with a shorter construction schedule for needed treatment, in order to protect the health of downstream waters, including the Merrymeeting River and Lake Winnipesaukee. To achieve downstream phosphorus concentrations low enough to protect the health of the Merrymeeting River, the Powder Mill Hatchery needs to reduce the amount of phosphorus in its wastewater by 78%. The limits proposed by the Draft Permit fall short: they would only reduce Powder Mill Hatchery's phosphorus discharge by 53%. EPA should not permit the Powder Mill Hatchery to release wastewater with concentrations of phosphorus higher than 10 ppb. This strict limit is necessary to ensure that the phosphorus concentrations in the Merrymeeting River do not exceed the level recommended by the recent Watershed Management Plan even in the summer when the Hatchery's wastewater is the only source for the river. The health of New Hampshire's water bodies is very important to me. I urge you to take action to set phosphorus limits that will protect our waters from the dangers of blue-green algae and enable New Hampshire residents and visitors to enjoy one of our most important assets – our rivers and lakes.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. EPA and NHDES collaboratively determined that a numeric, water quality-based total phosphorus limit is necessary to meet water quality standards in the receiving water. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. The conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2.

XIX. Comment from Mr. Bill Meyer (in addition to Conservation Law Foundation Form)

This describes my opinion better that I could, but I must add one thing of utmost importance: A yearly limit of 189 pounds of phosphorus must be established or increased fish production could still endanger the river system at 10 ppb.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The comment does not explain how a numeric TP limit of 10 µg/L or annual limit of 189 pounds is necessary to satisfy the requirements for establishing water quality-based limits for narrative water quality standards at 40 CFR § 122.44(d). *See also* Responses to Comments III.2.1 and VI. At the same time, EPA was persuaded to revisit the basis of the Draft Permit's TP limits and determined that more stringent TP limits are warranted. *See, e.g.*, Responses to Comments VI.2 and VI.3. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Response to Comment VI.2.

XX. Oral Comments Provided During Public Hearing

1. Representative Mike Harrington

I am Representative Michael Harrington, New Hampshire House of Representatives. One of the towns I represent is New Durham. And I have been involved in this now for a few years. And I have a couple of preliminary comments and then I'm going to read something. I just want to make known for the record, let it be known that a representative of Congressman Pappas, Patrick Carroll is here as well as a representative for Senator Shaheen, Peter Clark. And I mention that because I want to make sure that the panel understands how important that the elected representatives of New Hampshire take this issue.

One of the first comments I want to make is one that I have heard many times from people on this. And I cannot disagree with them on this. And that is that if this was not a state agency that ran the fish hatchery, if it was a private company, this problem probably would have been solved years ago. I mean, people are getting very frustrated by, seeing that, you know, Fish and Game has DES. DES has EPA. And EPA kicks you back to Fish and Game. And you have to understand, the average person out there doesn't understand all of this. To them, they're all the government. And we need to make sure that the government is working together, maybe better than it has been on this in order to keep this process moving.

The other thing I want to mention briefly is that, obviously, what you just said, that the permitting process itself is going to take some time. There is always the possibility of appeals and even court cases beyond that. And more than likely, until there is a non-appealable permit issued, the State of New Hampshire is probably not going to go forward with the funding for this. And the funding is going to take time. You obviously have to have engineering studies out

there, determine what has to be built, what the requirements are to meet the permit requirements, what the physical plant is going to look like. Those are going to have to go out for bid. And then, when the bill comes back, the funding is going to have to be appropriated through the legislature of New Hampshire. That all takes additional time. So, we are just letting people know, this is part of a much longer process. It's not going to happen overnight. So, I think, it is important that we get it as correct as soon as possible.

Having said that, I'd like to read the statement.

Again, I said, I am speaking for the Cyano Bacteria Mitigation Steering Committee, which has been around for a long time, and as you know, the water quality in Merrymeeting River has been deteriorating for many years resulting in frequent cyanobacteria blooms in the ponds of the river. The Powder Mill Fish Hatchery has been determined to be the single major source of pollution to the river in New Durham. And of course, we know, in the summertime, for example, I have been out there many times to look at it. And there is no solution to pollution being dilution, because there is no dilution. Virtually, 100 percent of the water goes through the fish hatchery during the summer months.

The towns of New Durham and Alton, through the Cyanobacteria Mitigation Steering Committee took it upon themselves to find the cause of the deterioration and see if something could be done to stop or reverse this. Over 100 volunteers have spent countless hours taking water samples, compiling data, doing research, exploring the Merrymeeting River in an effort to find the source of the problem and determine what could be done. We financed and completed a watershed management plan and associated documentation to properly and accurately present the data collected, the research done and the conclusions reached. The watershed management plan has been approved and accepted by the New Hampshire Department of Environmental Services. And you have been given the plan and all supporting data.

If we have any chance of restoring the river to the level of quality that will allow us once again to swim, fish and boat and otherwise enjoy our river, our watershed management plan requires strict limits on the discharge from the Powder Mill Fish Hatchery. The Cyano Bacteria Mitigation Steering Committee, through its water quality committee, concluded, the fish hatchery must discharge no more than 10 parts per billion of phosphorous with a limit of 189 pounds per year, and commensurate amounts of suspended solids and nitrogen into the Merrymeeting River.

Your decision in the Draft Permit allows a discharge of 25 parts per billion. That's during the winter months. And it's 14 parts per billion of phosphorus in the summer months and the fall. Such levels guarantee the continued degradation of the ponds below the fish hatchery in New Durham, and the eventual degradation of the entire river system below the ponds, culminating in damage to Lake Winnipesaukee.

And I think that's one thing everyone's got to keep in mind here. This is not stopping at Merrymeeting River and the ponds associated with it. This has eventually only one place to go, and that's into Lake Winnipesaukee. The committee, its volunteers, and the residents of both towns who supported the work by funding the watershed management plan, is committing to

doing the best they can for the Merrymeeting River and to restore its health. We request and expect your full support in doing so, starting with setting proper and obtainable limits to the discharge from the fish hatchery. And I can give you a copy of this as well.

I just want to stress the fact that how much work has been put into this by individuals. They have been going out there taking samples, meeting. They have hired people to do this. It culminated in a meeting last year where they had this watershed plan approved. There was a member of the New Hampshire DES who was involved in that. And all of those people, after hiring these outside experts, decided that the figure was 10 parts per billion. And it seems like, what the Draft Permit is doing is quite a big difference from that. I mean, if you take the average over the course of the year, it's over 20 parts per billion. And realizing that the cyanobacteria -- I'm an engineer, but not an environmental one. The cyanobacteria bloom is not a major concern in the winter months. But, you keep dumping all that phosphorus in, it's only going to stay in the river and migrate its way downstream. So, when the water temperature does go up, and the cyanobacteria bloom is possible again, you have loaded up the river in advance. And then, cutting it back to 14 in the June through October months, just doesn't seem to be sufficient on what we have been told. So, I really hope you give it careful consideration. And if there is a good technical reason why those higher limits are acceptable and they won't result in that cyanobacteria bloom, please be very specific when you respond back to this and give everyone a good reason. Because, there has been an awful lot of hard work put into this. And they deserve a really good answer if you're going to disagree with them.

EPA Response

Representative Harrington provided oral comments at the public hearing, submitted a written statement at the public hearing (above), and submitted written comments during the public notice period (see Comment VII). The comments were substantially similar. EPA has responded to the comments submitted by Representative Harrington in Response to Comment VII.

2. David Swenson

Thank you for the opportunity to have some public input. For those who have attended, you can tell from the information from Representative Harrington and you will hear others, too, that there is significant interest obviously in the outcome of what you may do based on the input that we give you tonight.

The New Durham Select Board appreciates EPA's development criteria for the continued permit to the New Hampshire Fish and Game Powder Mill State Fish Hatchery. While we agree with many of the provisions noted in the proposed permit, there are several areas where the Select Board has considerable concern and strongly differ with selected criteria/provisions noted in the proposed EPA permit.

As background information, it is important to emphasize that the Select Board, through irrefutable evidence over several years, believes that the Powder Mill State Fish Hatchery is responsible for polluting the Merrymeeting River, thus causing the downstream ponds from

the Powder Mill State Fish Hatchery, including Marsh, Jones and Downing Ponds to be classified as impaired for primary contact recreation for the 303 (d) listing due to cyano bacteria and associated hepatotoxins. Powder Mill State Fish Hatchery, through its discharge of pollutant phosphorus, without proper treatment prior to discharge, has resulted in phosphorus concentration and remitted issues of total solids and nitrogen so high that portions of the Merrymeeting River, such as Marsh Pond, have become the most degraded category eutrophic. This has had a negative impact in the town's economic well being, as its primary source of tourism through its natural resources, that is the Merrymeeting Lake and Merrymeeting River, and related ponds.

The goal for the New Durham Select Board is not only to reduce phosphorus in the Merrymeeting River, but to do so in a manner which initiates an opportunity to remediate the damage already done by the Powder Mill State Fish Hatchery and other sources of phosphorus in the Merrymeeting watershed. The town has already begun to address this by committing significant direct town sourced funding in 2019 and 2020 for remediation, the town's boat access on Marsh Pond, and an application for Section 319 funds to remediate storm water runoff at Merrymeeting Road Bridge and at South Shore Road, along with substantial matching town funds should the grant be awarded in 2020. This is not directly to the Powder Mill State Fish Hatchery. This is other potential sources that the town has control over. We've already started funding remediation work on that.

The Select Board believes there are five primary shortcomings in the proposed EPA permit.

One, the proposed summer month limit of 14 micrograms per liter total phosphorus is unlikely to prevent cyano bacteria blooms. Additionally, the combined maximum of 14 micrograms per liter for the summer months and 25 micrograms per liter over the course of the year are unlikely to prevent future cyanobacteria blooms or remove Marsh Pond from its current impaired status.

Number two, the net increase of total phosphorus load of 208 pounds per year, or the proposal put forward in the Merrymeeting watershed plan developed in 2019 will make meeting all of the downstream water quality goals nearly impossible.

Number three, the Draft EPA Permit does not provide limits on the discharge of total suspended solids and total nitrogen which are critical in addressing a holistic approach to achieve both EPA's goals and town goals in restoring the currently impaired water bodies to mesotrophic status.

Number four, the current permit proposal has no provision for reconsideration of the phosphorus permit limit established should future water quality testing show continued degradation of water quality in Marsh Pond or other Merrymeeting watershed water bodies.

And number five, the EPA expects to see improvement in algae blooms and a median Marsh Pond concentration of 12 micrograms per liter. However, there is no projection in this permit as to exactly when EPA feels these water quality goals should be met and what steps will be taken should these goals not be met in the time limitations set forth.

The Select Board concerns noted in the comments herein directly relate to the New Durham approved master plan addressing natural resources which define the character of this town. One of the town's primary natural resources is the Merrymeeting Lake and Merrymeeting River and its related ponds. New Durham's master plan states it's intent is "to preserve New Durham's natural resources and rural landscape for the sustainable health, safety and welfare of current and future generations."

Under the current EPA permit proposed for the Powder Mill State Fish Hatchery, the Select Board does not see that EPA fully understands, nor shares the town's intent to preserve New Durham's natural resources and help mitigate already impaired water bodies from continued phosphorus and other pollutants from Powder Mill State Fish Hatchery.

Therefore, the town of New Durham's Select Board strongly urges the EPA to reconsider its allowable phosphorous discharge limits for Powder Mill State Fish Hatchery to no more than a maximum of 10 micrograms per liter total phosphorus, monthly average for each month of the year and address, in specific criteria, the discharge limits of total suspended solids and total nitrogen to reduce key pollutant sources. This total phosphorus maximum and other criteria limits may then allow the Merrymeeting River and its related ponds to eventually return to a mesotrophic status preventing further cyano bacteria blooms from occurring and diminish the potential for phosphorus pollution in New Hampshire's largest economic tourist hub, Lake Winnipesaukee.

EPA Response

David Swenson, as representative for the New Durham Board of Selectmen, read a written statement at the public hearing (above), and submitted written comments during the public notice period (see Comment VIII). The comments were substantially similar. EPA has responded to the comments submitted by the New Durham Board of Selectmen in Response to Comment VII.

3. Tom Irwin

For the record, my name is Tom Irwin. I direct the New Hampshire Office of Conservation Law Foundation. I will be brief. We will be submitting extensive written comments within the comment period. Three major issues I'd like to touch on are related to nutrients, both phosphorus and nitrogen, total suspended solids and the compliance schedule that is in the Draft Permit. But, before I turn to those points, I just want to commend the work that has been done here locally through the Alton, New Durham CyanoBacteria Mitigation Steering Committee and the New Durham Water Quality Committee, investments by the New Durham Select Board. In more than 20 years working at CLF, and most of those years working on Clean Water Act matters, I have not come across a community that has engaged more and done more pro-actively to address a water quality problem as I have here. So, I want to applaud the work that is happening here.

And a significant part of our comments are that we hope that EPA will follow the strong recommendations that have been made locally through a science based watershed management plan related to the threats that are currently facing the Merrymeeting River. I will also say that, in my more than 20 years at CLF, I have never come across a situation in which a single polluter, a

single discharger is having such a discreet and major impact on the water body. If you look at where the Powder Mill State Fish Hatchery is located, it is located immediately downstream from the Merrymeeting Lake, one of the cleanest lakes in New Hampshire, and immediately downstream of the Powder Mill State Fish Hatchery we are seeing eutrophic conditions, we are seeing cyano bacteria blooms, all fueled by phosphorus nitrogen total suspended solids that are coming out of this facility, essentially, untreated.

One quick point I want to make with respect to cyanobacteria, which is one of the drivers here with these water bodies having been designated as impaired as a result of cyanobacteria blooms, is that, in addition to interfering with recreational uses, there is a growing correlation, a growing body of evidence that, exposure to cyanobacteria blooms correlates with a higher incidence of neurodegenerative diseases such as ALS and Alzheimer's. So, this is a public health issue as well. So, with respect to the three issues I wanted to touch on, very quickly, phosphorus. We believe the permit is not sufficiently protective in the effluent limits it has established for total phosphorus, both in terms of concentration and in terms of load.

Again, a lot of work went into the development of the Merrymeeting Lake and River watershed plan. And we agree with the conclusions of that report and urge EPA to adopt the more stringent total phosphorus limits, both in terms of load and concentration as recommended by that report. We are also concerned with the fact that the Draft Permit contains no effluent limitations for total nitrogen and urge EPA to establish numeric limits, numeric effluent limitations for total nitrogen in its Final Permit.

With respect to total suspended solids, I won't retread the ground that Mr. Quimby just did, other than to say, we are seeing tens of thousands of pounds of suspended solids discharged into these waters from this facility resulting in significant accumulations of sediments which, as Mr. Quimby described, creates this internal loading source of phosphorus continuing to perpetuate the problem. We are very concerned that the permit does not contain an effluent limit for total suspended solids. And we urge EPA to adopt a limit and one that will prevent the ongoing accumulation of solids as sediments within Marsh Pond and the internal loading effect that results from that.

Finally, with respect to the compliance schedule, we are very concerned with the EPA's proposal to give Fish and Game an entire permit term, an entire five year permit term to construct a treatment facility. We are confident that, if Fish and Game cares about this river and is serious about producing fish in a sustainable way, that it can achieve what is necessary at this site in a time period much shorter than five years. But, regardless, whether it takes three years or five years, we are especially disappointed that the Draft Permit contains no operational limitations during that five year term. This is not a wastewater treatment plant servicing a population. In those circumstances, you can't turn a valve and shut the plant off. That kind of plant has to continue to operate for a period of time until it can be improved. This plant could be turned off. You could turn off the valves, end the problem, while the solution is being developed, while a treatment plant is being developed. We are not necessarily advocating that this facility stop operating. But, there are measures that could be taken, during this five year term, that will reduce pollution before a new treatment plant is even built. It could dramatically reduce the number of fish being produced. There could be more cleaning processes, regimens added to the operation of

the facility. But, one way or the other, through operational changes, this facility could contribute significantly less pollution to the Merrymeeting River before a new treatment plan is constructed.

So, we would urge EPA, in its Final Permit, to include terms that require Fish and Game immediately to begin operating this facility differently until such time as it has constructed a treatment plan that is compliant with the Clean Water Act.

EPA Response

Tom Irwin, on behalf of Conservation Law Foundation, provide oral comments at the public hearing as well as substantial and technical written comments during the public notice period. See Comments in III. EPA has responded to the lengthy written comments, which are substantially similar to the comments provided at the public hearing, in Section III of this Response to Comments document.

4. Gene Young

I am chairman of the Alton Conservation Commission. I am speaking on behalf of the commission. Thank you for this opportunity to comment on the Draft Permit for the hatchery.

I think, by now, we all understand that the Merrymeeting River and its ponds have probably been irreparably damaged by the pollution discharges from the hatchery. We have all watched the ponds in New Durham become off limits for any use. And we see the damage moving into the marshes in Alton and in the lower reaches of the river system, and threatening the water quality in Alton Bay.

The people of Alton recognize the enormity of the threat to our most valuable environmental asset. And we are working every day to protect it. In order to understand what happened to our watershed and what might be done to reverse the damage, both towns, through the CMSC, commissioned a watershed management plan, which you have and which you have seen. The watershed management plan details the severity of degradation in the river and makes it clear that the Merrymeeting simply cannot continue to absorb the high levels of pollutants coming out of that hatchery. The conservation commission fully supports the conclusions and the remedies called for in the plan.

Your draft pollutant discharge permit calls for levels of phosphorus and other pollutants discharged from the hatchery which are known to be higher than that which causes blooms and subsequent toxin releases. In order to protect the long term health and safety of our river and Alton Bay, the commission requests that the final permit limits the discharges of phosphorus in the hatchery to no more than 189 pounds of phosphorus per year with a limit of 10 parts per billion in the outflow and commensurate limits on the nitrogen and total solids.

EPA Response

Gene Young, as representative for the Alton Conservation Commission, provide an oral statement at the public hearing (above), and submitted written comments during the public notice

period (see Comment X). The comments were substantially similar. EPA has responded to the comments submitted by the Alton Conservation Commission in Response to Comment X.

5. Pat Tarpey

I am the executive director with the Lake Winnipesaukee Association. Our organization's mission is to protect the natural resources and water quality of the lake and the watershed, those water bodies in its watershed. And for the past 10 years, we've been working pretty diligently with communities around the lake to address the excessive nutrient loading that is coming into Lake Winnipesaukee. We have completed four watershed management plans and we are currently doing one now for Moultonboro Bay. So, we've also had a lot of interest and some involvement in the development of the watershed management plan for Merrymeeting Lake and its river. Obviously, it is the largest inflow of water to Alton Bay and Lake Winnipesaukee. So, it is within our mission focus. I agree with a lot of what has already been stated. So, I don't want to rehash that. And we will be submitting comments to you.

I would like to focus on the rationale for the development or the selection of the 12 micrograms per liter target for Marsh Pond which is the immediate down stream water body. It states in Appendix D that, New Hampshire DES uses 12 micrograms per liter as their target. I'm a little confused with that statement. I know they establish nutrient criteria for different trophic classifications. Lake Winnipesaukee is oligotrophic, so, it is subject to an 8 micrograms per liter target which it is that. In the watershed management plan for Merrymeeting River and the lake, it states, "at a minimum, the ponds down stream of Merrymeeting Lake should exhibit at least mesotrophic conditions or better without the influence of the hatchery." And it was agreed by the water quality goals committee, I guess, to consider them mesotrophic at this time for the purposes of the management plan. So, if you agree with that, at least, not necessarily do I, but, the target in lake phosphorus concentration for Marsh Pond should not be set at 12. It should be set at 10.8. That complies with the standard operating procedures for a similar capacity analysis that are set for New Hampshire waters under the guidance for developing watershed management plans.

The anti-degradation provisions of the New Hampshire surface water quality standards which are under the environmental W 1705.01 require that, at a minimum, 10 percent of the total assimilative capacity of any water body must be held in reserve. So, taking the 10 percent means from the 12 micrograms per liter. That puts you at the 10.8. And I think, at a minimum, that should be the target. But, I would also argue that the trophic class for Marsh Pond would likely be oligotrophic if it weren't for the decades of excessive nutrient loading that have come in from the hatchery. And in that watershed management plan, the consultant did model natural conditions, current conditions, without the fish hatchery and future conditions. And current conditions model, which is the lake loading response model that EPA is using in this Draft Permit, puts Marsh Pond as oligotrophic. So, we do feel that the communities are correct in setting their goal at 10 micrograms per liter for an in lake level. And I think that's what EPA should agree to.

EPA Response

Pat Tarpey, as representative for the Lake Winnipesaukee Watershed Association, provide an oral statement at the public hearing (above), and submitted written comments during the public notice period (see Comment XI). The comments were substantially similar. EPA has responded to the comments submitted by the Lake Winnipesaukee Watershed Association in Response to Comment XI. EPA has addressed in detail comments about the appropriate water quality threshold for establishing a numeric TP limit in Responses to Comments III.2.1 and VI.2.

6. Michael Gelinas

I have lived in New Durham all of my life. My father was a health officer. I have always cared about the river. And I'm going to approach it a little different, because everybody's really hit on a lot of good points.

The point I want to make is, before the hatchery expanded in the '70s, this was swimming right below the hatchery. This picture here, I'm going to give you both of them, is the same place in May. You're addressing pollution, but what upset me the most about the permit is going 25 to 14, the load the remainder of the year, other than September, is so low compared to September. That facility, you're going to have to do to treat September would be in an idle to keep it to 14 all winter long. It's a shame to go to 25 when the load matters so much.

I'm the guy that got UNH to go out there. I was in the boat when the girl was dropping her tests and got so giddy because the cyano bacteria is the highest she had ever seen. She couldn't believe it. It was close to UNH. She made a study of it. It's probably one of the most studied water bodies in the last three years because it is terrible. So, one of the points I wanted to make is, in May and early May, the algae, the fibrous algae is already fully developed. I have pictures. I have a camera with the dates on it. So, to say May isn't important is wrong. That's critical time just like June, July, August and September.

I was with the guy pulling the milfoil. I was there when he says, this is two feet deep. How am I supposed to pull the roots. Over here it is three feet deep. There is so much algae floating in the river right now, that it's hard for him to find it. After they went in, there was so much silt disturbed just pulling the milfoil out, it looked like all of the fibrous algae had died. Because, I mean, there is balls like this everywhere. And it was just covered with the silt that they disturbed trying to pull the milfoil. That's how bad that river has got.

And as Pat clearly said, I liked it when she said it, it only bears 6. Well, a 6 is oligotrophic, not mesotrophic. And so, if the hatchery wasn't there, before the hatchery was there, 10 percent of the river bottom was gravelly and had silt. But, now, after the hatchery, now there's two and three feet. So, I just want to address a few things different than the others did because they did such a good job. But, pictures don't lie. And I was told today it was a swamp, always a swamp. That offended me so much, because I have pictures that prove that, before the hatchery was there, they -- well, the hatchery expanded, they used to swim there.

EPA Response

Michael Gelinas provided an oral statement at the public hearing (above) and submitted written comments during the public notice period (see Comment XIII). The comments were substantially similar. EPA has responded to the comments submitted by Mr. Gelinas in Response to Comment XIII. EPA has also responded at length to comments on the appropriate trophic classification of the receiving water in Response to Comment III.2.1.

7. Bill Meyer

I am with the CMSC and the New Durham Water Quality Group. We have grandchildren.We have them come up in the summer, spend a week or two. A few years ago, the two little girls jumped off the -- I've got a swing out over the water, supposedly for the kids, but I love it. Anyways, and they came up through that stuff. It wasn't where they jumped in, but where they swam over to to come out. And it eventually hit where they -- went to where they jumped in anyways. Rushed them into the shower. We didn't seem to have any bad effects. But, it scared you.

At that point, Marsh and Jones, we're quite sure, were equally as bad, except it was a different cyanobacteria. It didn't glow fluorescent green. It wasn't until people started testing. Mike Gelinas started testing figuring it was in what we had seen at Downing Pond. So, he goes around checking basically the septic. And so, no problem. He, in effect, tested all the way up to the hatchery and it was bingo. The eastern end of Downing Pond is a swamp. It is being fed nutrients and silt and everything else. Mike will tell you, when he was a kid, they water skied through there. I have trouble getting my canoe through there most of the time.

New Durham and Alton got together and had a watershed plan with a group vetted by the New Hampshire environmental people. They included -- I'm sorry -- produced the watershed plan which included assimilative capacity of the system. This led to the determination of 10 [parts per billion] and 10 just being a tool, because what counts is 189 pounds per year that the river can assimilate. Really don't care how it's done, except, the only reasonable way I know of is to go to the 10 [ppb] limit.

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, including consideration of the recommended TP limits of 10 µg/L and 189 pounds per year, see Responses to Comments III.2.1 and VI.2.

8. Penny Meyer

When we moved to New Hampshire in 2012, we had great expectations because we were finally at a place that we both thought would be a great place for our grandchildren and for us. And now, if anything happens to my husband, I can't take care of the property. But yet, if I try to sell it, people ask about the pond, can they swim in it? Can they have fun in it? And I have to tell them, no. You just brought down my property value. And I don't like that. Please don't do it any more.

EPA Response

Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond and the downstream waterbodies. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, see Responses to Comments III.2.1 and VI.2.

9. David Bickford

I, like the folks you just heard from, I own quite a bit of property around Downing Pond which is where the cyanobacteria is, the waterfront, have thousands of feet of water front on that and up on Jones Pond. And they are right. We never had this cyanobacteria issue until recently. It's really gotten extreme.

My concern is, I went to a seminar that was put on by a professor and was up at Wolfeboro. And if I recall correctly, he said, you don't want anything over 10 parts per billion, otherwise, you're going to be in trouble with cyanobacteria. And the seminar was specifically about cyanobacteria. It was a professor from the university. I don't know if I mentioned that. I can't remember his name now.

So, I'm not clear on why these numbers are the right numbers. I would prefer zero. You know, what comes out -- what goes in should come out the same as it went in. And it should be filtered out or whatever when it goes back into the river. And those of us downstream should get the cleanest water possible.

And that's what I have always thought of EPA as being the ones that would make sure those at the end of the tail pipe would be unpolluted. And I'm curious as to where does that leave us at Downing Pond at the permit levels. I don't know how that would develop exactly. But, what is right? Is it going to cure the dirty water that we have at Downing Pond? And just as important probably is Alton Bay. What is going to happen to them?

EPA Response

EPA determined that the discharge of TP from the hatchery has a reasonable potential to cause or contribute to an excursion of the narrative criteria for nutrients at Env-Wq 1703.14(b) and to the impairment of the primary contact recreation designated use in Marsh Pond and the downstream waters due to hepatotoxic cyanobacteria microcystins. Control of algal growth, and particularly of cyanobacteria, can be achieved by reducing total phosphorus. The Final Permit includes year-round, water quality-based TP limits of 12 µg/L at each outfall and an annual, mass-based limit of 227 lbs/year. EPA believes that the conservative, water quality-based TP limits in the Final Permit will address the potential for the hatchery's effluent to cause or contribute to violations of phosphorus-related water quality standards in Marsh Pond. For a detailed discussion regarding the TP limits contained in the Final Permit and compliance with water quality standards, including consideration of the recommended TP limits of 10 µg/L and 189 pounds per year, see Responses to Comments III.2.1 and VI.2.

10. Ruben Wentworth

I'm also one of the selectmen in town, the chairman presently at this time. Also, a resident of the town of Alton. A gentleman that has grown up, born and raised in the town of Alton. Before I read the letter that the Board of Selectmen presented to you, I'd just like to say one thing as somebody who has lived here all their life and seen the changes from the '60s right up through, we have a pond called Mills Pond in the town of Alton behind the store that I presently own. We had problems years ago in the '70s from a local laundromat. And we have cyano bacteria there now. Basically, the cyano bacteria that we have now and the blooms we have are caused basically from catch basins and run offs from state roads and town roads. That is on the list to be fixed. Also, across the road is Wentworth Pond Road.

I am kind of embarrassed, because, the first time in 58 years, I found out, had the same last name as I do. We always just called it the river. And we also just called it the marsh, not Mills Pond. It was a pond that we'd swim in in early May to the 1st of June. Our parents would say, where are you going, we're going down to the marsh to go fishing. We didn't go fishing. We ended up in inner tubes swimming around in the water. You can't do that any more. My granddaughter came back from Missouri one time. She says, can we fish? I said no. And she says why? I said, well, we have signs here, no fishing. Please no contact during the summertime because of the toxins that are released from cyano bacteria. It is still a place today that, people go and fish in the summertime. We have to stop them from time to time because our signs aren't big enough and we are going to replace the signs, please do not fish. You are taking your hands and your children's safety in -- precautions. So, even the fire department now cannot use that pond to do work and testing and running their hoses because of the mists that can fall out during the summertime. That came to us this year from Fred Quimby. That's how bad our pond has become.

Alton, through the Alton, New Durham Cyanobacteria Mitigation Steering Committee, participated in the development of the Merrymeeting River Lake watershed management plan and contributed taxpayer funds for its creation. In addition, Alton also collected of water samples which provided water quality data for the watershed plan. Alton also was represented on the

water quality goals committee which established the water quality goals for no more than 10 parts per billion phosphorus monthly average for each month of the year throughout the Merrymeeting River.

Alton has a strong vested interest in the outcome of any long term strategy which will influence the concentration of loads of TP in the Merrymeeting River since its tax base is heavily dependent on water front property, particularly around Lake Winnipesaukee, the receiving water body of the Merrymeeting River. Our town and its economy, like many in the lakes region, is also dependent on vacationers in our area throughout the year. Continuing high TP loads entering Alton Bay will degrade the water and may result in algae and cyano bacteria blooms which will prove aesthetically unpleasing, disrupt primary contact recreation and eventually may also impair aquatic animal life.

For each of these reasons, we feel everything possible should be done to reduce the TP released from the hatchery to the lowest levels possible given today's technology. We are aware of the experience of the Platte River Hatchery in Michigan and their ability to discharge hatchery water with TP concentrations no higher than their intake water. We encourage this technology be installed in the Powder Mill State Fish Hatchery. We insist, whatever technology is installed, be capable of reducing the TP concentration to no more than 10 parts per billion monthly average each month of the year.

Currently, the Merrymeeting River delivers over 1900 pounds of TP into Alton Bay. Our watershed predicts that 28 percent of this load is derived from the fish hatchery. Elimination of the fish hatchery would reduce the loads to Alton Bay by over 500 pounds per year and create an average concentration of 11 parts per billion concentration in Wentworth Pond, our impoundment area of the Merrymeeting River one mile from Alton Bay and Lake Winnipesaukee.

None of us are saying that we want the fish hatchery gone, because it is a good economic for us in New Durham and Alton. It teaches our children about fish. It teaches our children about conservation. We want to keep it. Reducing the discharge level at the fish hatchery will result in an in lake concentration of Wentworth Pond of 13 parts per billion and require some additional storm water remediation to bring the total in lake TP to 10 parts per billion and further, prevent further degradation. We are making the commitment to reduce non point sources of TP in order to achieve the 10 parts per billion TP concentration, but, this will be extremely difficult if the fish hatchery is allowed to discharge 14 parts per billion in June through September, and 25 parts from October through May of the year. Therefore, we request the EPA, in the Draft Permit, set the limit no greater than 10 parts per billion at either outfall monthly average each and every month of the year.

We also note in the fact sheet, page 4, that Congress enacted the Clean Water Act to restore, and maintain the chemical, physical and biological integrity of the nation's waters. Restoration also is a great concern of ours. Marsh Pond and two impoundments in New Durham are holding back enormous quantities of benthic deposits which are nutrient rich and created by the fish hatchery's release of tens of thousands of pounds per year of total suspended solids. Through a biological process commonly referred to as spiraling, phosphorus cycles within riverine systems as

both organically bound phosphorus and reactive or soluble phosphorus which is a form readily available to be incorporated into organisms. Phosphorus may be bound to living matter --readily available to be incorporated into organisms. I keep reading that line -- plants, animals, and microbes, or to the iron in sediments. The bound phosphorus is stationary much of the year until the living matter dies and is degraded where, upon it is released as soluble can migrate further downstream. Likewise, iron bound phosphorus can be released from the sedimentary deposits if anoxic conditions exist near the bottom on the water column. Once released, it is soluble. It can move further downstream. We have evidence that, at least in Marsh and Jones Ponds, anoxia does exist near the bottom during the summer months contributing to internal loading and resulting in phosphorus moving further downstream.

Therefore, even after the fish hatchery has limits placed on its discharge, Alton will experience high concentrations of phosphorus as long as these nutrients rich benthic deposits exist. We therefore request the EPA establish some mechanism to prevent the release of phosphorus from Marsh and Jones Ponds or remove the sediment. In much the same way as the EPA makes the creators of superfund sites clean up the site after it discontinues polluting the environment, we feel the EPA should hold the state agency, which created the nutrient sediments, responsible and rendering them safe again.

EPA Response

Ruben Wentworth, as representative for the Alton Board of Selectmen, provided oral comments at the public hearing (above), and submitted written comments during the public notice period (see Comment IX). The comments were substantially similar. EPA has responded to the comments submitted by the Alton Board of Selectmen in Response to Comment IX.

11. Paul Raslavicus

I am a member of the CBA, but, I am here on just a personal mission. And I wanted particularly to thank the local people that got this thing rolling, particularly, Dr. Quimby, Mike Gelinas and many others.

I have been associated with this town, this coming summer, it will be 50 years. And I came here up the road wondering where is this lake I am supposed to see. And the first thing we saw some civilization there, it was a very nice small, cute fish hatchery. The growth of this fish hatchery has been tremendous. I don't know the statistics. But, I can tell you, from just looking at the buildings and looking at what has happened over there, and looking at the results of what was going on in there, I think that it is beyond its ability to function the way it is. So, I appreciate the fact that you're going to establish certain rules.

I would urge you particularly to pay attention to Dr. Quimby's comments because they're very scientific and they are very real. And I think you should take significant -- take a look at his comments very seriously. Finally, everything has been talking about downstream from the fish hatchery. And I think that you must be aware that the growth of the fish hatchery has been related to what is happening upstream. At what has happened upstream, probably around 10 years ago, perhaps a little bit less, the water intake pipe has been put down much lower and much

bigger. So, they can process much more water from the clean Merrymeeting Lake and put it into the fish hatchery.

That, I don't know what kind of permits are needed. But, some of us who live in that vicinity thought, boy, this is going to really change things. And the fishermen started saying, well, the water that is coming out of the lake now, at a much deeper depth is colder. And the volume that is going out of the lake is larger than it has ever been. And that's a very serious issue. I think,

somebody can control the amount of water flow that is fed into that fish hatchery. The increased water may increase the production in that hatchery and that was the result. The result was what we have now. So, I would urge you to take a look at that. That's a very important feature.

EPA Response

Paul Raslavicus provided an oral statement at the public hearing (above), and submitted written comments during the public notice period (see Comment XVI). The comments were substantially similar. EPA has responded to the comments submitted by Mr. Raslavicus in Response to Comment XVI. In addition, EPA has carefully considered the comments submitted by Dr. Quimby and provided detailed responses is Section VI of this response to comments document.

12. Russell Vaiden

I am a resident of Bristol, New Hampshire. And I am a summertime resident of Gilford and on Welch Island. I just want to point out that the problem doesn't stop at the Alton town line. The problem has progressed all the way through Gilford, perhaps not as severely as it is for you folks here in New Durham. But, when I swim out in front of my camp, I no longer will swim without goggles because of the floating algae that is prevalent. When I was a kid, and granted, it was 1954 when we bought our camp, the beach was clean. Now, it's brown with algae. The eelgrass was not to be seen. Now, it's everywhere. So, the pollution that's coming is going right down stream as you would normally expect. Severely affecting people at this end. But, also, beginning to affect us at the other end. Welch Island is more than three quarters of the way from Alton Bay to the discharge in Laconia. We've got a major problem and it's time to put a zero onto the source. That's all I need to say.

EPA Response

Russell Vaiden provided an oral statement at the public hearing (above), and submitted written comments during the public notice period (see Comment XV). The comments were substantially similar. EPA has responded to the comments submitted by Mr. Vaiden in Response to Comment XV.

XXI. Comments from Conservation Law Foundation After the Close of the Public Notice Period

Conservation Law Foundation ("CLF") submits this supplemental comment on the Powder Mill State Fish Hatchery's Draft NPDES Permit (NH0000710, hereinafter "the Permit"), currently under review by the U.S. Environmental Protection Agency. This comment supplements CLF's comment, submitted on February 14, 2020, to address the implications of the Supreme Court's recent holding in *County of Maui v. Hawaii Wildlife Fund*, 140 S. Ct. 1462 (2020) for the Permit.

1. Background

The officials and staff who operate and control the Powder Mill Facility vacuum up to 10,000 gallons of used water from the Facility's raceways and ponds several times per week, attempting to capture undissolved solid wastes, namely fish feces and uneaten fish food. The vacuumed material is termed "cleaning water," a slurry of solid wastes and wastewater. Permit at 11 (defining cleaning water 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."); *see also* Transcript of Deposition of Matthew Pehrson, *Conservation Law Foundation v. Normandeau et al.*, No. 1:18-cv-00996 (D.N.H. Mar. 27, 2019) ECF No. 47-13 at 70:14-22.

The Powder Mill State Fish Hatchery's current NPDES permit prohibits operators of the Facility from directly discharging cleaning water to the Merrymeeting River. Permit at 11. Until August 2019, Facility officials transferred vacuumed cleaning water into two so-called "settling" ponds at the south end of the Facility. Transcript of Deposition of Jason Smith, *Conservation Law Foundation v. Normandeau et al.*, No. 1:18-cv-00996 (D.N.H. Mar. 27, 2019) ECF No. 47-11 at 57:1-12. They routinely flushed the "settling" ponds with additional water, allowing the concentrated effluent—with unsettled, solid wastes whirled up by the inrushing water—to wash out to the Merrymeeting River. *See* Transcript of Deposition of Michael Gelinas, *Conservation Law Foundation v. Normandeau et al.*, No. 1:18-cv-00996 (D.N.H. Mar. 27, 2019) ECF No. 47-14 at 64:7-18; Declaration of Michael Gelinas, *Conservation Law Foundation v. Normandeau et al.*, No. 1:18-cv-00996 (D.N.H. Mar. 27, 2019) ECF No. 47-15 at 4. During 2017, 2018, and 2019, this flushing occurred as often as "most Fridays" during the summer. Gelinas Declaration, *supra*, at 4.

In August 2019, Facility officials began use of what they termed an "interim system." Smith Deposition, *supra*, at 65:7-9. Since that time, officials have directed vacuumed cleaning water not to the "settling" ponds, but to two converted circular tanks containing duckweed. *Id.* at 62:15-17; 64:20-22; Pehrson Deposition, *supra,* at 73:17-21. From here, concentrated wastewater flows into a third circular tank containing green hair algae. Pehrson Deposition, *supra,* at 74:1-11. Ultimately, the wastewater is directed to a drainage bed where it is discharged through biobags and woodchips into the ground and leaches into groundwater.[1] *Id*. at 75:6-15; *see also* Draft Permit Factsheet at 13, 18. A New Durham resident observed that the biobags were replaced in December or January, and the old biobag was disposed of at the Facility just 50 feet from a stream that feeds the Merrymeeting River.

The cleaning water that Facility officials add to the interim system has a high phosphorus and nitrogen concentration, and the effluent coming out of the system's drainage bed remains highly concentrated. The system's duckweed, algae, biobags, and woodchips are intended to reduce phosphorus and nitrogen concentrations in cleaning water before it is released as effluent to the ground from the drainage bed. The system, however, is not providing treatment as intended: "the intended biological treatment is not occurring in the circular tanks due to poor design" and "[t]he algae and plants in the tank, the wood chips, and the algae-covered biobags are removing very little nitrogen or phosphorus from the effluent". Declaration of Wane Schneiter *Conservation Law Foundation v. Normandeau et al.*, No. 1:18-cv-00996 (D.N.H. Mar. 27, 2019) ECF No. 47-26 at 2-3. According to environmental engineer Dr. Wane Schneiter, the interim system will "result in about the same reduction in phosphorus discharge as was occurring with the bass ponds"—meaning that it is not an improvement over the settling ponds. *Id*. at 4.[2]

The Facility's interim system is situated less than 300 feet from the Merrymeeting River. Once effluent percolates into the ground from the interim system's drainage bed, it reaches groundwater, and is transported to the waters of the Merrymeeting River. This transfer likely occurs within a matter of months.[3] Given the proximity and relatively short time of the movement of effluent to groundwater, the vast majority of the phosphorus and nitrogen in the effluent reaches the surface waters of the Merrymeeting River.

2. The Supreme Court's *County of Maui* Decision

On April 23, 2020, the Supreme Court issued its decision in *County of Maui v. Hawaii Wildlife Fund*. 140 S. Ct. 1462 (2020). In *Maui*, the Court considered whether the Clean Water Act "requires a permit when pollutants originate from a point source but are conveyed to navigable waters by a nonpoint source, here, groundwater." *Id*. at 1468 (internal quotation marks omitted). Specifically, Petitioner County of Maui pumped sewage into injection wells, allowing their pollutants to be transferred half a mile by groundwater flow from the wells to the Pacific Ocean without authorization under a NPDES permit. *Id.* at 1469. Respondent environmental groups brought a Clean Water Act citizens' suit against the Petitioner, arguing they were discharging pollutants from a point source to navigable waters of the United States without authorization under a NPDES permit in violation of the Clean Water Act. *Id*. The *Maui* Petitioner argued that the wastewater treatment facility was not subject to Clean Water Act permitting requirements because the pollutants were conveyed indirectly via a groundwater connection. *Id*. at 1470. The Court disagreed, holding that a discharge of pollutants through groundwater to navigable waters is subject to the permitting requirements of the Clean Water Act "if that discharge is the functional equivalent of a direct discharge from the point source into navigable waters." *Id*. at 1476-77. The Court explained that "some of the factors that may prove relevant" in the determination of functional equivalency include:

(1) transit time;
(2) distance traveled;
(3) the nature of the material through which the pollutant travels;
(4) the extent to which the pollutant is diluted or chemically changed as it travels;

(5) the amount of pollutant entering the navigable waters relative to the amount of the pollutant that leaves the point source;
(6) the manner by or area in which the pollutant enters the navigable waters;
(7) the degree to which the pollution (at that point) has maintained its specific identity.

Id. at 1476–77. The *Maui* Court did not proceed to determine whether the groundwater transfer of pollutants from the injection wells were the "functional equivalent direct discharge from the point source into navigable waters," as the parties had entered into a conditional settlement under which the Petitioner would, *inter alia*, make good-faith efforts to obtain and comply with an NPDES permit if it were unsuccessful on appeal. *Id.* at 1484 (Alito, J. dissenting).

3. Implications of the *Maui* Holding for the Powder Mill Permit

EPA's draft permit maintains the prohibition on direct discharges of cleaning water. Draft Permit at 11-12. However, the draft permit makes no mention of the Facility's "interim system" nor its groundwater transfer of phosphorus and nitrogen from the Facility to the Merrymeeting River. The biobags through which the "interim system" releases wastewater into the ground is a point source. Under the Clean Water Act, "point source" means "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." 33 U.S.C. § 1362(14). The interim system's biobags are such a conveyance, similar to a well or container from which pollutants—namely phosphorus and nitrogen—are discharged. Courts have held that virtually identical structures are point sources. *See, e.g., Conservation Law Found., Inc. v. Longwood Venues & Destinations, Inc.*, 422 F. Supp. 3d 435, 444 (D. Mass. 2019) appeal pending on other grounds (1st Cir. 2019) (holding that the court "inexorabl[y]" concludes leach pits are point sources).

The Facility's release of highly concentrated dissolved phosphorus and nitrogen to the ground, less than 300 feet from the waters of the Merrymeeting River, results in a transfer of the pollutants by groundwater that is the functional equivalent to a direct point source discharge to the River. Phosphorus and nitrogen travel a mere 300 feet from the beds to the River, with a transit time likely within a matter of months. Leachate from the improperly disposed biobags travels an even shorter distance of 50 feet to surface water in less time. There is no indication that the extent of phosphorus or nitrogen metabolization or attenuation in the percolation to groundwater or during the brief groundwater flow results in chemical changes or elimination of the pollutants released from the drainage bed or from the used biobags.

As a point source discharge of phosphorus and nitrogen that is functionally equivalent to a direct discharge to the River, the Facility's use of the "interim system"—to the extent it continues[4]—must be addressed in the final permit. The permit must either exclude this discharge from authorization—in which case its ongoing use will result in liability under the Clean Water Act—or it must set the conditions and terms for an authorized discharge. The conditions should include: estimated phosphorus and nitrogen loads from this point source discharge, estimated percentage of the total phosphorus and nitrogen loads from the Facility, mass-based and concentration-based effluent limitations for phosphorus and nitrogen (established to ensure

attainment of water quality standards, taking into account the cumulative phosphorus and nitrogen loads from the rest of the Facility as well as phosphorus re-release), sampling requirements for phosphorus and nitrogen, maintenance requirements, and the amount of time the interim system will be in operation. The final permit must also require proper off-site disposal of the exhausted biobags.

EPA's attention to this issue is not only required by law but especially important given the detrimental effects that phosphorus discharges from the Facility are having on the River and its ecology, including the violation of several state water quality standards. Discharges of phosphorus and nitrogen from the interim system's drainage bed to the River via groundwater will expose the owners and operators of the Facility to liability under the Clean Water Act, as long as they are not authorized under a NPDES permit.

4. Conclusion

For the reasons stated above, in the final permit, EPA should address the Facility's interim system to the extent Facility officials will continue to use it. The interim system releases pollutants to the Merrymeeting River in a discharge that is functionally equivalent to a direct discharge from point source to navigable water. Without authorization (and attendant effluent limitations and monitoring and reporting requirements) under a NPDES permit, this discharge is unlawful.

[1] Effluent overflow from the third circular tank is "discharged through a 3-inch pipe to several bag filters [biobags] laid on the top of 8-10 inches of wood chips. . . The water flows through the wood chips and into the ground." Draft Permit Factsheet at 13.
[2] Dr. Schneiter presented this assessment following his review and critical analysis of calculations by David Neils of the New Hampshire Department of Environmental Services regarding the interim system's effects on the Hatchery's overall phosphorus load, based on data collected during testing of the interim system conducted by Mr. Neils in September and October 2019. *See* Schneiter Declaration, *supra*, at 2-3.
[3] Based on the surface topology of the ground containing the interim system, there appear to be multiple potential paths connecting groundwater flow with the Merrymeeting River. EPA must analyze the hydrology of this section of the River and model the fate and transport of the discharge from the interim system to determine how much pollution is travelling through groundwater and how quickly it reaches surface water.
[4] As the system's name indicates, the operators of the Facility might cease use of the "interim" system at any time. The operators of the Powder Mill Facility implemented the "interim system" during the pendency of a federal claim addressing the unlawfulness of their cleaning water practices. The creation of the interim project was, by Defendants' admission, voluntary. Pehrson Deposition, *supra*, at 75:20-23; Smith Deposition, *supra*, at 66:21-67:2. Defendants have not and cannot commit to its future, not least because its long-term efficacy in containing the wastewater component of the cleaning-water slurry is yet unknown.

EPA Response:

Although this comment was submitted after the close of the public comment period for the Powder Mill Fish Hatchery proposed NPDES permit, EPA exercises its discretion to address the comment, due in part to the issuance of the *Maui* decision after the close of the comment period. This was the sole comment EPA received after the public comment period closed.

Neither the proposed permit nor the Final Permit authorizes a discharge from the interim treatment system to a water of the United States, either as a direct surface water discharge or as a

discharge through groundwater that is the "functional equivalent" of a direct surface water discharge to a water of the United States.

EPA's record for this permitting action does not demonstrate that a discharge is occuring from the interim treatment facility to groundwater that is the "functional equivalent" of a direct discharge to a water of the United States. Although the comment asserts that nutrients are "highly concentrated" in wastewater that "leaches into groundwater" and that the transfer of these nutrients through groundwater to the Merrymeeting River "likely occurs within a matter of months," the comment provides no information or data to support these claims, and EPA's record includes no such information or data. The comment provides no documentation of the concentration of pollutants it asserts are leaching into groundwater, and no documentation that these pollutants ever reach a water of the United States. The comment's claim that pollutants are "likely" to reach a water of the United States within several months is based only on an evaluation of "surface topography of the ground containing the interim system." Based on this non-scientific approach and with no supporting data, the comment asserts that "there *appear to be* multiple *potential* paths connecting groundwater flow with the Merrymeeting River" (emphasis added). The comment provides no information on the subsurface conditions at the site—soil type/porosity, depth to groundwater, flowpath, nutrient dynamics (e.g., sorption, biological uptake, microbial processing), hydraulic conductivity—and no information or evidence that an actual discharge of pollutants occurs to a water of the United States. NPDES permits are only required for *actual* discharges; NPDES permits are not required for proposed discharges or *potential* discharges. *NPCC v EPA,* 635 F.3d 738 (2011).

The comment states – also without documentation – that there is no evidence of metabolization or attenuation of the nutrients it asserts are discharged to the ground from the interim treatment system and, therefore, assumes that the pollutants ultimately reach the surface water via groundwater. The Supreme Court's decision in *County of Maui v. Hawaii Wildlife Fund*, 140 S.Ct. 1462 (2020), did not instruct NPDES permitting authorities to assume that discharges to the ground or to groundwater that occur in the vicinity of a surface water are the "functional equivalent" of direct discharges to surface water. Neither the "functional equivalent" test set out by the Supreme Court nor the CWA itself requires a facility owner or operator or a permitting authority to prove the *absence* of a discharge. And even if an actual discharge of pollutants occurs through groundwater and reaches a water of the United States, the *Maui* Court recognized not all discharges of pollutants through groundwater that reach a water of the United States are the "functional equivalent" of a direct surface water discharge and therefore not all such discharges require a NPDES permit. The permitting agency must in such instances apply the "functional equivalent" test, requiring consideration of "many potentially relevant factors." *Id.* at 1476-77.

The comment asserts that EPA "must analyze the hydrology. . . and model the fate and transport of the discharge from the interim system to determine how much pollution is traveling through groundwater and how quickly it reaches surface water" and that EPA's attention to this issue is "required by law." This is incorrect. Section 301(a) of the CWA prohibits unpermitted point source discharges of pollutants to a water of the United States. The obligation to obtain a permit lies with the facility owner or operator. The facility owner or operator has not requested permit coverage for a discharge from the interim treatment system, and EPA's record for this permitting

action does not demonstrate that such a discharge is occuring. The Final Permit does not authorize such a discharge, and the Clean Water Act does not require EPA to analyze or provide permit coverage for discharges alleged by commenters that are not demonstrated in the permitting record.

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

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

to receiving water named

Merrymeeting River
Hydrologic Basin Code 01070002

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

This permit shall become effective on [DATE].[1]

This permit expires at midnight, on [DATE].

This permit supersedes the permit issued on December 22, 2011.

This permit consists of this **cover page**, **Part I** and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this day of

_____
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Pursuant to 40 Code of Federal Regulations (C.F.R.) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 C.F.R. § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge culture water and treated hatchery effluent through Outfall Serial Number 001 to Merrymeeting River. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	**Effluent Limitation**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Effluent Flow[6]	2.0 MGD	Report	1/day	Meter or Estimate
Total Suspended Solids (TSS)	Report lbs/d Report mg/L	Report lbs/d Report mg/L[7]	1/week	Composite
Biochemical Oxygen Demand (BOD_5)	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
pH[8]	6.5 - 8.0 S.U.		1/week	Grab
Ambient pH[8]	Report S.U.			
Total Ammonia as N	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/month	Composite
Total Nitrogen	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
Effluent Total Phosphorus (October – May)[9]	Report lbs/d 25 µg/L	Report lbs/d Report µg/L	1/week	Composite
Effluent Total Phosphorus (June – September)[9]	Report lbs/d 14 µg/L	Report lbs/d Report µg/L	1/week	Composite

Effluent Characteristic	**Effluent Limitation**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Interim Total Phosphorus Requirement (first 60 months from the effective date of the permit)	Report lbs/d Report µg/L	Report lbs/d Report µg/L	1/week	Composite
Dissolved Oxygen[13]	Report Minimum mg/L		1/week	Grab
Dissolved Oxygen Saturation[13]	Report Minimum %		1/week	Grab
Effluent Temperature[13]	Report °F		1/week	Grab
Fish Biomass on Hand	Report lbs/d	---	1/month	Calculation
Fish Feed Used	Report lbs/d	Report lbs/d	1/month	Calculation
Feed Conversion Ratio	Report	---	1/month	Calculation
Total Residual Chlorine (when in use)[14]	11 µg/L	19 µg/L	1/day	Grab
Hydrogen Peroxide (when in use)	---	0.7 mg/L	1/day	Grab
Formaldehyde (Formalin in use)[15, 16]	1.6 mg/L	4.6 mg/L	1/day	Grab
Dissolved Oxygen (Formalin in use)[15]	Report Minimum mg/L		1/day	Grab

2. 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 through Outfall Serial Number 002 to Merrymeeting River. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	**Effluent Limitation**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Effluent Flow[6]	4.2 MGD	Report	1/day	Meter or Estimate
Total Suspended Solids (TSS)	Report lbs/d Report mg/L	Report lbs/d Report mg/L[7]	1/week	Composite
Biochemical Oxygen Demand (BOD_5)	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
pH[8]	6.5 - 8.0 S.U.		1/week	Grab
Total Ammonia as N	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/month	Composite
Total Nitrogen	Report lbs/d Report mg/L	Report lbs/d Report mg/L	1/week	Composite
Effluent Total Phosphorus[9]	Report lbs/d 25 µg/L	Report lbs/d Report µg/L	1/week	Composite
Effluent Total Phosphorus (June – September)[9]	Report lbs/d 14 µg/L	Report lbs/d Report µg/L	1/week	Composite
Interim Total Phosphorus Requirement (<u>first 60 months from the effective date of the permit</u>)	Report lbs/d Report µg/L	Report lbs/d Report µg/L	1/week	Composite
Dissolved Oxygen[13]	Report Minimum mg/L		1/week	Grab
Dissolved Oxygen Saturation[13]	Report %		1/week	Grab

Effluent Characteristic	Effluent Limitation		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Effluent Temperature[13]	Report °F		1/week	Grab
Fish Biomass on Hand	Report lbs/d	---	1/month	Calculation
Fish Feed Used	Report lbs/d	Report lbs/d	1/month	Calculation
Feed Conversion Ratio	Report	---	1/month	Calculation
Total Residual Chlorine (when in use)[14]	11 µg/L	19 µg/L	1/day	Grab
Hydrogen Peroxide (when in use)	---	0.7 mg/L	1/day	Grab
Formaldehyde (Formalin in use) [15,16]	1.6 mg/L	4.6 mg/L	1/day	Grab
Dissolved Oxygen (Formalin in use)[15]	Report Minimum mg/L		1/day	Grab

3. 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 through Outfall Serial Number SUM, which is the calculated cumulative load from Outfall Serial Numbers 001 and 002 to Merrymeeting River. The cumulative discharge from both outfalls combined shall be limited and monitored as specified below; Marsh Pond shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitation**		**Monitoring Requirements[1,2,3]**	
	Annual Total	**Average Monthly**	**Measurement Frequency[4]**	**Sample Type[5]**
Annual Total Phosphorus Load[10]	395 lbs/year	Report lbs/month	1/month	Calculation
Seasonal Total Phosphorus Load (June – September)[11]	87 lbs/season	Report lbs/month	1/month	Calculation
Interim Total Phosphorus Requirement (first 60 months from the effective date of the permit)	Report lbs/year	Report lbs/month	1/week	Composite
Ambient Total Phosphorus[12]	---	Report µg/L	2/month	Grab
Ambient Chlorophyll-a[12]	---	Report µg/L	2/month	Grab
Ambient Secchi Disc Transparency[12]	---	Report m	2/month	Grab

Footnotes for Parts I.A.1, I.A.2, and I.A.3:

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point to the receiving water after treatment, prior to co-mingling with any other wastestream. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA) and the State. The Permittee shall report the results to EPA and the State of any additional testing above that required herein, if testing is done in accordance with 40 C.F.R. § 136.

2. In accordance with 40 C.F.R. § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 or required under 40 C.F.R. chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). When calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of 1/day is defined as the recording of one measurement for each 24-hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Within a monthly reporting period, at least one weekly sample shall be collected on a day when raceway and/or tank cleaning operations are occuring. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Sampling of a parameter identified as "when in use" means that sampling is required only when the additive associated with that parameter is in use. If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

5. Each composite sample will consist of at least eight grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. Effluent flow shall be continuously measured and recorded using a flow meter and totalizer. In lier of a flow meter, weir calculations or direct measurement may be used to report effluent flow. Effluent flow shall be reported in million gallons per day (MGD).

7. If TSS exceeds the maximum daily benchmark of 10 mg/L, the Permittee shall evaluate its best management practices (BMPs) and implement corrective actions necessary to reduce the effluent concentration below the applicable benchmark. The maximum daily total suspended solids (TSS) value is a benchmark, not an effluent limitation. See Part I.C.4 of this Permit.

8. The pH shall be within the specified range at all times except as provided in Parts I.C.1 and I.E.3 of this Permit. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). When the pH range is less than the minimum of 6.5 S.U., the Permittee shall report the ambient, upstream pH in accordance with Part I.E.3 of this Permit.

9. For the purposes of this permit, total phosphorus analysis must be completed using a test method in 40 C.F.R. § 136 that achieves a minimum level of detection no greater than 10 µg/L.

10. The cumulative, 12-month rolling net phosphorus load from Outfall 001 and 002 shall not exceed 395 pounds per year. The total loading values shall be calculated as follows: Total Phosphorus (lbs/month) = [(average monthly total phosphorus concentration (mg/L) * total monthly effluent flow (millions of gallons)] * 8.34. The annual net phosphorus load from Outfalls 001 and 002 shall be calculated by adding the previous eleven (11) months load plus the current month load at each outfall, and then adding the 12-month rolling load at the two outfalls. The net average monthly phosphorus load shall be calculated as the sum of the average monthly load from each outfall.

11. The net phosphorus load from Outfall 001 and 002 from June 1 through September 30 shall not exceed 87 pounds. The seasonal net phosphorus load from Outfalls 001 and 002 shall be calculated by adding the average monthly load from June 1 to September 30 at each outfall, and then adding the load at the two outfalls.

12. The Permittee shall collect ambient total phosphorus and chlorophyll-a samples from the Deep Spot Marsh Pond sampling station twice per month between May 1 and October 31. Water quality sampling and analysis shall be in accordance with the methods described in the most recent NHDES Volunteer Lake Assessment Program Generic Quality Assurance Project Plan

available at www.des.nh.gov/organization/divisions/water/wmb/vlap/. The Permittee shall obtain secchi disk transparency depth readings without use of a viewscope concurrent with the twice monthly sampling events.

13. Dissolved oxygen samples shall be collected from a discharge without formalin present. Report the minimum daily concentration for the month and the percent saturation and effluent temperature that corresponds with the minimum daily value.

14. Monitoring for total residual chlorine (TRC) is only required for discharges when Chloramine-T is in use. For the purposes of this permit, TRC analysis must be completed using a test method in 40 C.F.R. § 136 that achieves a minimum level of detection no greater than 20 µg/L. The compliance level for TRC is 20 µg/L. The Permittee shall report TRC values less than the minimum level (<20 µg/L) as zero in the DMR.

15. 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. A sample for dissolved oxygen 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.

16. Formaldehyde shall be tested using EPA Method 1667, Revision A or 8315A. The ML for formaldehyde is 50 µg/L.

Part I.A. continued.

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

5. The discharge shall be free from substances in kind or quantity that settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities.

6. Tainting substances shall not be present in the discharge in concentrations that individually or in combination are detectable by taste and odor tests performed on the edible portions of aquatic organisms.

7. The discharge shall not result in toxic substances or chemical constituents in concentrations or combinations in the receiving water that injure or are inimical to plants, animals, humans or aquatic life; or persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life, or wildlife that might consume aquatic life.

8. The discharge shall not result in benthic deposits that have a detrimental impact on the benthic community. The discharge shall not result in oil and grease, color, slicks, odors, or surface floating solids that would impair any existing or designated uses in the receiving water.

9. The discharge shall not result in an exceedance of the naturally occurring turbidity in the receiving water by more than 10 NTUs.

10. The Permittee shall notify EPA and the New Hampshire Department of Environmental Services (NHDES) within 24 hours upon the occurrence of any mortality 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 the reporting requirements in Part II.D.3 and 5.

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

12. 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.

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

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

(1) 100 micrograms per liter (µg/L);
(2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
(3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7); or
(4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f) and State regulations.

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

(1) 500 µg/L;
(2) One mg/L for antimony;
(3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7); or
(4) Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f) and State regulations.

That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall(s) listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

2. The discharge of iodine and/or phosphoric acid solution(s) at the Facility to the receiving water is prohibited.

3. 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, or any raceway, pond, canal, circular tanks, 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.

C. SPECIAL CONDITIONS

1. The Permittee may be considered in compliance with the pH limits of this Permit if the Permittee satisfies conditions set forth in Part I.E.3 below.

2. Best Management Practices (BMPs)

   a. 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.

   (1) 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.

   (2) 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 seven (7) days after initiating use of that drug. The oral report must identify the drugs used, method of application, and the reason for using that drug.

   (3) For INADs and extra-label drug uses, the permittee must provide a written report to EPA and NHDES-WD within thirty (30) days after initiating use of that drug. The written report must identify the drug used and include: the reason for treatment, date(s) and time(s) of the addition (including duration), method of application, and the amount added.

   b. 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.

   (1) 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.

(2) The permittee must provide an oral report to EPA and NHDES-WD within twenty-four (24) hours of discovery of any reportable failure as defined in item 2.a., above, 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.

(3) The permittee must provide a written report to EPA and NHDES-WD within five (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.

c. Spills

In the event of a spill of drugs, pesticides or feed 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 twenty-four (24) hours of its occurrence and a written report within five (5) days to the above Agencies. The report shall include the identity and quantity of the material spilled.

3. Best Management Practices Plan (BMPP)

The permittee must continue to implement and maintain a BMP Plan (BMPP) upon the permit's effective date that describes how the following requirements will be achieved. The permittee will make the current version of that BMPP available to EPA and/or the NHDES-WD upon request. Within ninety (90) days following the permit's effective date, the permittee shall certify in writing to EPA and NHDES-WD that a written BMPP 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 BMPP within thirty (30) days following any change in facility design, construction, operation, or maintenance which affects the potential for the discharge of pollutants into surface waters or after the EPA and/or NHDES-WD determine certain changes are required following an event that results in non-compliance, a facility inspection, or review of the BMPP. The permittee shall place in the BMPP a written documentation of each amended change along with a brief description stating the reason for the amendment, including the date the change triggering

the amendment occurred. The permittee shall also document the date the amended BMPP was implemented.

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

a. Solids Control

(1) 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.

(2) 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.B.3. prohibits the direct discharge of cleaning water absent some form of solids removal prior to discharge.

(3) 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 such material 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.

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

b. Biological Control

(1) 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.

(2) 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 is showing signs of stress.

c. Materials Storage

(1) 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.

(2) Implement procedures for properly containing, cleaning, and disposing of any spilled material.

d. Structural Maintenance

(1) Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.

(2) Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

e. Recordkeeping

(1) 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.

(2) 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.

(3) 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 BMPP to include the dosage concentration, frequency of application (hourly, daily, etc.), the duration (hours, days) of treatment, and the method of application.

f. Training

(1) 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.

(2) 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 BMPP all aquaculture drugs and chemicals including all INAD and extra-label drugs and for each, identify:

(1) Product name and manufacturer.

(2) Chemical formulation.

(3) Purpose/reason for its use.

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

(5) The method of application.

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

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

(8) The persistence and toxicity in the environment.

(9) Information on USFDA approval for the use of said medication or chemical on fish or fish related products used for human consumption.

(10) 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.).

4. Benchmark Requirements for Total Suspended Solids (TSS)

A benchmark value of 10 mg/L applies to total suspended solids (TSS) to ensure that the BMPs described above are effectively controlling discharges of pollutants from Outfalls 001 and 002. The TSS benchmark is not an effluent limitation. Concentrations exceeding this benchmark represent a level of concern requiring further evaluation of the BMPP to determine if the non-numeric, technology-based limits are effectively minimizing TSS concentrations in the discharge. If TSS monitoring results required in Part I.A.1 and I.A.2 of this Permit exceed a maximum daily benchmark value of 10 mg/L, the Permittee shall:

a. Investigate the cause of the elevated concentration and implement corrective actions necessary to reduce the effluent concentration of TSS below the applicable benchmark. Corrective actions shall be implemented as soon as possible, but no later than 30 calendar days following the date of the exceedance of the benchmark value. If implementation of the corrective actions is unable to be completed within this timeframe, the Permittee shall document the reason and provide an alternative

schedule for implementing corrective actions to EPA and NHDES in writing within 30 calendar days following the date of the exceedance of the benchmark value.

b. Review the BMPP to determine if additional control measures or other changes are necessary to maintain TSS concentrations below the applicable benchmark. If additional control measures or other changes are necessary, the Permittee shall revise the BMPP and submit the revisions to EPA and NHDES, including any schedule to implement changes to control measures, within 30 days following the sampling date of the exceedance of the benchmark value.

5. Discharges of Chemicals and Additives

The Permittee shall only use aquaculture drugs and chemicals approved the U.S. Food and Drug Administration (USFDA) in accordance with labeling instructions or as allowed in Part I.C.2, above. EPA will defer to the USFDA regarding whether or not a particular drug, chemical, or additive is used in accordance with USFDA requirements. Each year as an attachment to the December DMR, the Permittee shall certify in writing that all aquaculture drugs and chemicals used during the calendar year were approved by the USFDA and were used in accordance with USFDA labeling or as allowed under Part C.2.a.

The discharge of any chemical or additive, including chemical substitution, which was not reported in the application submitted to EPA and the State or provided through a subsequent written notification submitted to EPA and the State, other than additives used in accordance with Part I.C.2, is prohibited. Upon the effective date of this permit, chemicals and/or additives which have been disclosed to EPA and the State or used in accordance with Part I.C.2 may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. With the exception of additives used in accordance with Part I.C.2, discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA and the State unless otherwise notified by EPA and/or the State. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA and the State in accordance with Part I.D.3 of this permit. The written notification must include the following information, at a minimum:

a. The following information for each new chemical and/or additive that will be discharged:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS), Chemical Abstracts Service (CAS) Registry number, and EPA registration number, if applicable, for each chemical/additive;
(4) The frequency (e.g., daily), magnitude (i.e., maximum application concentration), duration (e.g., hours), and method of application for the chemical/additive;

(5) The maximum discharge concentration; and
(6) The vendor's reported aquatic toxicity, if available (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)).

b. Written rationale which demonstrates that the discharge of such chemicals and/or additives as proposed will not: 1) will not add any pollutants in concentrations which exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

6. Compliance Schedule

The effluent limit for total phosphorus shall be subject to a schedule of compliance. The Permittee shall notify EPA and NHDES of compliance or noncompliance with each interim or final requirement within 14 days following the date assigned to the interim or final compliance requirement in items a, e, and g, below.

a. Within four (4) months of the effective date of the permit, the Permittee shall select and contract with a consultant to complete the engineering design.
b. Within sixteen (16) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a status report relative to the preliminary design of the improvements required to achieve compliance with the total phosphorus limits.
c. Within twenty-four (24) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a preliminary design of the improvements required to achieve compliance with the total phosphorus limits.
d. Within thirty (30) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a final design of the improvements required to achieve compliance with the total phosphorus limits.
e. Within thirty-six (36) months of the effective date of the permit, the Permittee shall initiate construction of the improvements required to achieve compliance with the total phosphorus limits.
f. Within forty-eight (48) months of the effective date of the permit, the Permittee shall submit to EPA and NHDES a status report relative to the construction of the improvements required to achieve compliance with the total phosphorus limits.
g. Within sixty (60) months of the effective date of the permit, the Permittee shall complete construction of the improvements and shall comply with the total phosphorus limits.

D. REPORTING REQUIREMENTS

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

a. The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State no later than the 15th day of the month following the monitoring period electronically using NetDMR. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. *See* Part I.D.5. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this permit.

3. Submittal of Requests and Reports to EPA Water Division (WD)

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

(1) Transfer of Permit notice;
(2) Request for changes in sampling location;
(3) Notification of fish mortality;
(4) BMP reports and certifications, including reporting required by Part I.C.4;
(5) Request to discharge new chemicals or additives; and
(6) Request for pH Effluent Limitation Adjustment.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov or by hard copy mail to the following address:

U.S. Environmental Protection Agency
Water Division
NPDES Applications Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. Submittal of Reports in Hard Copy Form

a. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission:

(1) Prior to December 21, 2020, written notifications required under Part II. Starting on December 21, 2020, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA

system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

b. This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

5. State Reporting

Unless otherwise specified in this permit or by the State, duplicate signed copies of all reports, information, requests or notifications described in this permit, including the reports, information, requests or notifications described in Parts I.D.3 through I.D.6 shall also be submitted to the New Hampshire Department of Environmental Services, Water Division (NHDES–WD) electronically to the Permittee's assigned NPDES inspector at NHDES-WD or as a hardcopy to 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

6. Verbal Reports and Verbal Notifications

a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

b. Verbal reports and verbal notifications shall be made to EPA's Enforcement and Compliance Assurance Division at:

617-918-1510

c. Verbal reports and verbal notifications shall also be made to the State's Regional NPDES inspector at:

603-271-1494

E. STATE PERMIT CONDITIONS

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

2. This NPDES Discharge Permit is issued by the EPA under Federal 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.

3. The pH range of 6.5 to 8.0 Standard Units (S.U.) must be achieved in the final effluent unless the ambient upstream pH in the receiving water is outside of this range, and is not altered by the discharge or activities. If the 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 that 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 to the DMR.

4. Compliance Schedule

   If the Permittee elects to install a wastewater treatment system to achieve compliance with the Total Phosphorus effluent limitations in Part I.A.1, I.A.2, and I.A.3 of this Permit, the Permittee shall:

   a. Within four (4) months of the effective date of the permit, select and contract with an engineering design consultant through the qualifications-based selection (QBS) process in accordance with Env-Wq 509.
   b. Within fourteen (14) months of the effective date of the permit, submit a Draft Wastewater Treatment Plant (WWTP) Basis of Design Report to NHDES for review and approval in accordance with Env-Wq 707. The Permittee and consultant shall address all NHDES review comments prior to approval in accordance with Env-Wq 707.01(c).
   c. Within sixteen (16) months of the effective date of the permit, obtain NHDES approval of the Basis of Design Report.
   d. Within twenty-two (22) months of the effective date of the permit, submit a Draft WWTP Preliminary Design Report (including 30% design plans and specifications) to NHDES for review and approval. Engineering plans and specifications shall meet

applicable requirements Env-Wq 703. The Permittee and consultant shall address all NHDES review comments prior to approval in accordance with Env-Wq 703.01(a) and (c) and Env-Wq 703.08.

e. Within twenty-four (24) months of the effective date of the permit, obtain NHDES approval of the Preliminary Design Report.
f. Within thirty (30) months of the effective date of the permit, submit 90% WWTP design plans and specifications to NHDES for review and approval. The Permittee and consultant shall address all NHDES review comments prior to approval in accordance with Env-Wq 703.01(a) and (c) and Env-Wq 703.08.
g. Within thirty-two (32) months of the effective date of the permit, obtain NHDES approval of the WWTP design plans and specifications and NHDES authorization to solicit construction bids. If the project receives state and/or federal funding, solicitation of bids and award of construction contract shall be conducted in accordance with Env-Wq 510.

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

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

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

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

condition.

3. Duty to Provide Information

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

4. Oil and Hazardous Substance Liability

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

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

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

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

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

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

7. Duty to Reapply

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

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

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

2. Need to Halt or Reduce Not a Defense

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

3. Duty to Mitigate

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

4. Bypass

a. Definitions

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

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

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

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

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

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

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

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

C. MONITORING REQUIREMENTS

1. Monitoring and Records

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

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

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

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

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

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

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

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

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

D. REPORTING REQUIREMENTS

1. Reporting Requirements

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

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

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

c. *Transfers*. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

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

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

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

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

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

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

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

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

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any

relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

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

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

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

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

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

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

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

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

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

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

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

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

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

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

Discharge of a pollutant means:

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

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

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

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

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

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

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

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

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

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

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

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

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

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

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

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

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

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

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

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

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

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

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

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

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

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

NPDES means "National Pollutant Discharge Elimination System."

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

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

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

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

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

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

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

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

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

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

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

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

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

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

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

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

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

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

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

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

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

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

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

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

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

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

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

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

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

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

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

Waters of the United States or waters of the U.S. means:

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

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

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

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

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

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

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

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

(f) The territorial sea; and

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

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

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

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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FACT SHEET

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

NPDES PERMIT NUMBER: NH0000710

PUBLIC NOTICE START AND END DATES: December 31, 2019 – February 14, 2020

NAME AND MAILING ADDRESS OF APPLICANT:

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

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

RECEIVING WATER AND CLASSIFICATION:

Merrymeeting River (Basin ID 01070002)
Watershed
Class B

SIC CODE: 0921 (Fish Hatcheries and Preserves)

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Appendices

1.0 Proposed Action

New Hampshire Fish and Game (the "Permittee") has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from the Powder Mill State Fish Hatchery ("PMSFH" or the "Facility") into the Merrymeeting River.

The permit currently in effect was issued on December 22, 2011 with an effective date of December 22, 2011 and expired on December 22, 2016 (the "2011 Permit"). The Permittee filed an application for permit reissuance with EPA dated October 20, 2015, as required by 40 Code of Federal Regulations (C.F.R.) § 122.6. Since the permit application was deemed timely and complete by EPA on November 9, 2015, the Facility's 2011 Permit has been administratively continued pursuant to 40 C.F.R. § 122.6 and § 122.21(d). EPA conducted site visits on May 24, 2017, August 30, 2018 and October 9, 2019.

This NPDES Permit is issued by EPA under federal law. New Hampshire construes Title L, Water Management and Protection, Chapters 485-A, Water Pollution and Waste Disposal, to authorize the New Hampshire Department of Environmental Services (NHDES) to adopt a federal NPDES permit as a State surface water discharge permit. As such, all the terms and conditions of the permit may, therefore, be incorporated into and constitute a discharge permit issued by NHDES.

2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251 – 1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 C.F.R. §§ 122.4(d), 122.44(d)(1), 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations (TBELs) and "water quality-based" effluent limitations (WQBELs). *See* CWA §§ 301, 304(b); 40 C.F.R. §§ 122, 125, and 131.

2.1 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under CWA §§ 301(b) and 402 to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. *See* 40 C.F.R. § 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 § 301(b) of the CWA, including the application of EPA promulgated Effluent Limitation Guidelines (ELGs) and case-by-case determinations of effluent limitations under CWA § 402(a)(1). EPA promulgates NSPS under CWA § 306 and 40 C.F.R. § 401.12. *See also* 40 C.F.R. §§ 122.2 (definition of "new source") and 122.29.

In general, ELGs for non-POTW facilities must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989. *See* 40 C.F.R. § 125.3(a)(2). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit. In the absence of published technology-based effluent guidelines, the permit writer is authorized under CWA § 402(a)(1)(B) to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

2.2 Water Quality-Based Requirements

The CWA and federal regulations require that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 C.F.R. §§ 122.44(d)(1),122.44(d)(5), 125.84(e) and 125.94(i).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 C.F.R. §§ 131.10-12. Generally, WQSs consist of three parts: 1) beneficial designated use or uses for a water body or a segment of a water body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 C.F.R. § 131.12. The applicable State WQSs can be found in the New Hampshire Code of Administrative Rules, Surface Water Quality Regulations, Chapter Env-Wq 1700 *et seq*. *See also generally*, N.H. Rev. Stat. Title L, Water Management and Protection, Chapter 485-A, Water Pollution and Waste Disposal.

As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic

life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, 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 human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to monthly average limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

2.2.2 Antidegradation

Federal regulations found at 40 C.F.R. § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

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 water body from an existing activity. The antidegradation regulations focus on protecting high quality waters and maintaining water quality necessary to protect existing uses. Discharges that cause "significant degradation" are defined in NH WQS (Env-Wq 1708.09(a)) as those that use 20% or more of the remaining assimilative capacity for a water quality parameter in terms of either concentration or mass of pollutants or flow rate for water quantity. When NHDES determines that a proposed increase would cause a significant impact to existing water quality , the applicant must provide documentation to demonstrate that the lowering of water quality is necessary, that it will provide net economic or social benefit in the area in which the water body is located, and that the benefits of the activity outweigh the environmental impact caused by the reduction in water quality. *See* Env-Wq 1708.10(b).

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the exiting uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop

information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among the various sources, including point source discharges, subject to NPDES permits. *See* 40 C.F.R. § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 C.F.R. § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 C.F.R. § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 C.F.R. § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 C.F.R. § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 C.F.R. § 122.44(d)(1)(i).

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs, the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 C.F.R. § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 C.F.R. § 124.53 and expects that the Draft Permit will be certified.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the EPA permit appeal procedures of 40 C.F.R. Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 C.F.R. § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQSs and State requirements are contained in 40 C.F.R. §§ 122.4(d) and 122.44(d).

2.3 Effluent Flow Requirements

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the effluent limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under CWA § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced and the calculated effluent limitations might not be sufficiently protective (i.e., might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at a lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may

ensure the validity of its "worst-case" effluent flow assumptions through imposition of permit conditions for effluent flow.[1] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

The limitation on effluent flow is within EPA's authority to condition a permit to carry out the objectives and satisfy the requirements of the CWA. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 C.F.R. §§ 122.4(a) and (d); 122.43 and 122.44(d). A condition on the discharge designed to ensure the validity of EPA's WQBELs and reasonable potential calculations that account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§402 and 301 and the implementing regulations, as WQBELs are designed to assure compliance with applicable water quality regulations, including antidegradation requirements. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is also consistent with the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 C.F.R. § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Consequently, the effluent flow limit is a permit condition that relates to the Permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 C.F.R. §§ 122.41(d), (e).

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 C.F.R. Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been establish1ed to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 C.F.R. §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the wastewater discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of

[1] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id.* 40 C.F.R. §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599 (EAB 2010). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *See In re Washington Aqueduct Water Supply Sys., 11 E.A.D. 565, 584 (EAB 2004)*.

the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 C.F.R. Part 122.

NPDES permits require that the approved analytical procedures found in 40 C.F.R. Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.[2] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 C.F.R. § 122.21(e)(3) (completeness), 40 C.F.R. § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 C.F.R. § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[3] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 C.F.R. Part 136 or required under 40 C.F.R. chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to

[2] Fed. Reg. 49,001 (Aug. 19, 2014).
[3] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).

EPA under 40 C.F.R. §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on the EPA NetDMR support portal webpage.[4]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Conditions.

2.5 Standard Conditions

The standard conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 C.F.R. Part 122.

2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 C.F.R. § 122.44(l). Anti-backsliding provisions apply to effluent limits based on technology, water quality, and/or State certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2011 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The Facility is located at the headwaters of the Merrymeeting River at the Merrymeeting Lake Dam on Merrymeeting Road in New Durham, NH. A location map is provided in Figure 1. Water flows from Merrymeeting Lake at a rate of 3,700 to 4,500 gallons per minute (gpm). Influent can be sterilized with ultraviolet radiation prior to use at the hatchery, although ultraviolet system is not currently in use. The hatchery complex consists of a Hatchery House, multiple raceway units, three Show Ponds, four Woods Ponds) and four Bass Ponds (two of the former Bass Ponds, which had been used for settling, are currently drained and not being used) and 24 Circular Tanks. A site plan is provided in Figure 2.

PMSFH produces Eastern brook trout, rainbow trout, and brown trout for fisheries management of selected water bodies located primarily in the central part of the state (referred to as Regions 2 & 3, or Conservation District # 3 #2, #5 & #6). According to the most recent Best Management

[4] https://netdmr.zendesk.com/hc/en-us

Practices Plan (updated in September 2019), the total annual production levels at the Facility are about 65,000 pounds (lbs) of eastern brook trout, 97,000 lbs of rainbow trout, and 33,000 lbs of brown trout. The combined annual production target results in a potential cumulative harvestable weight of about 141,000 pounds for stocking. In 2019, the production target was 90,863 pounds. They met this target using 101,615 pounds of feed, which results in a pounds of feed conversion ratio of 1.12.

In the past, the facility provided landlocked Atlantic salmon; however, salmon production was moved to Nashua National Fish Hatchery to provide interim reductions in pollutant loads from the hatchery prior to issuance of a new Final NPDES Permit.

3.1.1 Effluent Limitation Guidelines

EPA has promulgated technology-based ELGs for BPT in 40 C.F.R. § 451.11 for flow-through and recirculating systems in the Concentrated Aquatic Animal Production Point Source Category. The technology-based ELGs for BAT in 40 C.F.R. § 451.12 and for BCT in 40 C.F.R. § 451.13 are the same as the corresponding limitations specified in 40 C.F.R. § 451.11.

3.2 Location and Type of Discharge

The Permittee has requested authorization to discharge fish culture water and treated hatchery effluent from the Facility through Outfalls 001 and 002 into the Merrymeeting River. The primary pollutants in fish culture water are total suspended solids, biochemical oxygen demand, nutrients, and ammonia. The Facility pumps water from Merrymeeting Lake at 3,700 to 4,500 gallons per minute (gpm) and discharges to the Merrymeeting River via two outfalls. Outfall 001 is located at 43.47418 North, -71.18017 West. Outfall 002 is located at 43.47112 North, -71.18030 West. The intake from Merrymeeting Lake is located at 43.47947 North, -71.17592 West. Merrymeeting Lake also supplies domestic water for use in the hatchery office, which is discharged to a septic system. All floor drains in the hatchery offices have been plugged.

Culture water is withdrawn from Merrymeeting Lake to a centralized distribution box where it flows to either the hatchery house and Raceways E, F, and G (west of the river) and discharges from Outfall 001; or to Raceways A, B, C, or D (east of the river) and through the woods ponds or to the circular rearing tanks, and discharges from Outfall 002. A schematic of water flow is provided in Figure 3. In response to concerns about the discharge from the former settling ponds to the river, the Facility recently drained two bass ponds (closest to the river), dredged the solids, and transported them offsite.

According to the Permittee, the hatchery employs various solids management practices. The first step is managing the amount of feed. The hatchery hand feeds fish and adjusts feeding rates based on reference guidelines, specific conditions at the hatchery, and daily inspections of fish rearing containers after feeding.

In addition to feed management, the hatchery follows specific solids collection and cleaning procedures to reduce the discharge of solids. When in use, raceways are cleaned weekly, which decreases to once every two weeks during winter; the 24 circular ponds are cleaned once every

two weeks. Cleaning involves brushing fish retaining screens/plates and removing solids from the settling area at the end of each raceway or outlet of the circular tanks ("quiescent zone") with a vacuum pump. The Draft Permit prohibits the direct discharge of cleaning water from the vacuum pump operation without treatment. Solids are transported to the 3 new wastewater storage ponds. Solids from the wastewater storage ponds are typically disposed of on land for agricultural purposes. The ten rearing tanks (5-foot diameter) and the 48 vertical egg incubation trays in the hatchery building are cleaned daily when in use.

Since the permit renewal application was submitted, the hatchery implemented changes in its solids management program in response to concerns about discharges of phosphorus to the Merrymeeting River. A schematic of a new treatment system is provided in Figure 4. A series of three circular tanks are dedicated for use as settling tanks. Each tank has a volume of about 800 ft^3. Two tanks are used as primary clarifiers, providing preliminary nutrient treatment. The third tank is used as secondary nutrient treatment and clarifier. Wastewater and vacuumed solids from the rearing units and quiescent zones is discharged via vacuum truck tank into Tank 1 or 3. A 3-inch pipe connects the overflow to Tank 2. Tanks 1 and 3 are seeded with bacterial cultures to promote preliminary nutrient removal and an upwelling flow to promote solids settling towards the center of the tank. Tanks 1 and 3 also contain duckweed at the surface, which minimizes sunlight, promotes bacterial growth while deterring algae growth, and provides additional nutrient removal. Settled solids in Tanks 1 and 3 are vacuumed and used in land application.[5]

Overflow from Tanks 1 and 3 flows into Tank 2. A microalgal culture suspended by silt screen is located in the upper 20 cm of Tank 2 to provide additional nutrient removal and solids collection, although the Facility recognizes that there have been challenges with keeping the screen in proper working condition. Overflow from Tank 2 flows through an upwelling sand filter in the center of Tank 2 before being discharged through a 3-inch pipe to several bag filters laid on the top of 8-10 inches of wood chips. The dirt bags filter particulates and the wood chips assist in additional nitrogen removal. The water flows through the wood chips and into the ground.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the Permittee, including Discharge Monitoring Reports (DMRs), from September 2014 through November 2019 is provided in Appendix A of this Fact Sheet. EPA typically uses five years of monitoring data to characterize effluent at industrial facilities. In this case, EPA evaluated data going back to January 2012, which is the first monitoring period under the current outfall configuration. However, the range and average pollutant values for this longer period were not substantially different, and in most cases average values were higher based on the more recent 5-year data period. EPA chose to evaluate a 5-year period for developing the Draft Permit.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

[5] According to the 2019 BMP Plan, the current method of solids disposal is at the sand pit owned by the Town of New Durham. Additional options include land application for agricultural purposes on local farms.

The Facility discharges through Outfalls 001 and 002 to the Merrymeeting River in New Durham, New Hampshire. The Merrymeeting River is part of the Lake Winnipesaukee Watershed. The Merrymeeting River has a history of industrial uses dating back to the early 1700s, including sawmill operations, hydropower, and gunpowder manufacturing. The River begins at the outlet of the Merrymeeting Lake dam, which was constructed in 1923. From the dam, the Merrymeeting River flows south through the hatchery and into Marsh Pond, Jones Pond, Downing Pond, the Merrymeeting State Wildlife Management Area, and Wentworth Pond before reaching the outlet at Alton Bay on Lake Winnipesaukee.

The State classifies the Merrymeeting River as Class B water. NHFGD classifies Merrymeeting Lake as supporting both cold and warm water fisheries. Class B waters are described in the New Hampshire Water Quality Standards (RSA 485-A:8, II) as follows: *"The waters of this classification shall be considered as being acceptable for fishing, swimming, and other recreational purposes and, after adequate treatment, for use as water supplies."* In addition, NH Water Quality Standards at Env-Wq 1703.01(c) specifies that "*All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters*."

The Merrymeeting River is not listed as impaired in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List"). This waterbody segment has not been assessed for attaining designated uses for aquatic life, wildlife, primary contact, and secondary contact recreation. The Drinking Water After Adequate Treatment designated use is listed as fully supported. The Fish Consumption Use is listed as not supporting (marginal), consistent with the statewide fish consumption advisory for freshwater fish for mercury.[6] The status of each designated use is presented in Table 1.

Table 1: Summary of Designated Uses and Listing Status

Designated Use	**Status**
Aquatic Life	No Data
Drinking Water After Adequate Treatment	Full Support
Fish Consumption	Not Supporting
Primary Contact Recreation	No Data
Secondary Contact Recreation	No Data
Wildlife	No Data

Downstream of the Merrymeeting River, Jones Dam Pond and Downing Pond are listed in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") as a Category 5 "Waters Requiring a TMDL" for the Primary Contact Recreation designated use.[7] The Primary Contact Recreation designated use is also listed as impaired for Marsh Pond in the Draft 2018 303d List. In all cases, the pollutant requiring a TMDL is cyanobacteria hepatotoxic microcystins. In addition, the Aquatic Life designated use for Jones Pond is listed in the 2016

[6] Technical Background for the 2008 Update to the New Hampshire Statewide Mercury Fish Consumption Advisory. New Hampshire Department of Environmental Services Environmental Health Program; April 2008.
[7] *New Hampshire 2016 Section 303(d) List of Threatened or Impaired Waters that Require a TMDL*. New Hampshire Department of Environmental Services, Concord, NH; November 2017.

Final 303(d) List as impaired due to non-native aquatic plants. To date no TMDL has been developed for this segment for any of the listed impairments. The status of designated uses in the downstream ponds is presented in Table 2. The discharge of pollutants in fish culture water and treated hatchery effluent from Outfalls 001 and 002 to the Merrymeeting River could potentially affect the listed impairments for cyanobacteria in the downstream ponds.

Table 2: Summary of Downstream Designated Uses and Listing Status

Designated Use	Status		
	Marsh Pond	**Jones Pond**	**Downing Pond**
Aquatic Life	No Data	Not Supporting	No Data
Drinking Water After Adequate Treatment	Full Support	Full Support	Full Support
Primary Contact Recreation	*Not Supporting**	Not Supporting	Not Supporting
Secondary Contact Recreation	No Data	No Data	No Data
Fish Consumption	Not Supporting	Not Supporting	Not Supporting

*Draft *New Hampshire Year 2018 Surface Water Quality List*

4.2 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQSs under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water.[8]
The critical flow in rivers and streams is some measure of the low flow of that river or stream. In New Hampshire, permit limits for aquatic life and human health criteria in non-tidal rivers and streams must be based on the receiving water lowest observed mean river flow for seven consecutive days, recorded over a 10-year recurrence interval, or 7-day 10-year low flow (7Q10). *See* Env-Wq 1705.2. New Hampshire also requires that 10 % of the Assimilative Capacity of the receiving water is reserved for future needs. *See* Env-Wq 1705.01.

The Powder Mill State Fish Hatchery is located just below the dam at the outlet of Merrymeeting Lake. Little to no flow discharges to the overflow channel from the lake's outlet during the summer months. Periods of no discharge on a recurring annual basis usually result in a finding of essentially no flow for seven consecutive days at the 10-year return period (7Q10). Given that there are days during summer where there is no flow over the dam, and because discharge of hatchery water from the 2 outfalls located within a short distance of each other is continuous, there is no dilution available for discharges from either of the hatchery's outfalls to the Merrymeeting River for the purposes of calculating water quality-based effluent limitations.

5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State water quality standards (WQSs) are described below. These proposed effluent limitations and conditions, the

[8] EPA Permit Writer's Manual, Section 6.2.4

basis of which is discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

EPA calculated this measure of production as the average of the daily maximum flow values reported by the Permittee from September 2014 through September 2019 (Appendix A). At Outfall 001, the average daily effluent flow is 2 million gallons per day (MGD). At Outfall 002, the average daily flow is 4.1 MGD.

EPA notes that the State of New Hampshire adopted new criteria into their WQSs in December 2016 and submitted them to EPA for review and approval. Although the new criteria have not yet been approved by EPA, the Draft Permit is being proposed with effluent limits derived to meet the new criteria in anticipation of a state certification to do so.

5.1 Effluent Limitations and Monitoring Requirements

The State and Federal regulations, data regarding discharge characteristics, and data regarding ambient characteristics described above, were used during the effluent limitations development process. Discharge and ambient data are included in Appendix A and B. EPA's Reasonable Potential Analysis is included in Appendix C and results are discussed in the sections below.

5.1.1 Effluent Flow

The 2011 Permit required the Permittee to report average monthly flow for Outfalls 001 and 002. From September 2014 through September 2019 (Appendix A), average monthly effluent flow at Outfall 001 has ranged from 1.1 MGD to 2.6 MGD with an average of 2.0 MGD. Average monthly effluent flow at Outfall 002 has ranged from 3.1 MGD to 6.0 MGD with an average of 4.2 MGD. In accordance with 40 CFR § 122.45(b)(2), EPA based the calculation of effluent limitations upon a reasonable measure of actual production of the Facility, or in this case, flow. EPA determined that the measure appropriate for this Facility is the average effluent flow. The Draft Permit establishes an average monthly flow limit of 2.0 MGD at Outfall 001 and 4.1 MGD at Outfall 002 based on average monthly flows during the previous five years. These limits are consistent with hatchery flows used to establish the annual phosphorus load limit. Monitoring via flow meter, direct measurement, or weir calculation is acceptable. The Facility currently measures flow using the sharp crested weir method or direct measurement. Direct measurement is performed by calculating total flow (in gallons per minute) based on the time it takes to fill a container of known volume.

5.1.2 Total Suspended Solids

Solids, which come from feces and uneaten feed, are the largest pollutant loading generated at CAAP facilities. Solids could include inorganic (e.g., silt, sand, clay, and insoluble hydrated metal oxides) and organic matter (e.g., flocculated colloids and compounds that contribute to color). Solids can clog fish gills, resulting in an increase in susceptibility to infection or asphyxiation. Suspended solids can increase turbidity in receiving waters and reduce light penetration through the water column or settle to form bottom deposits in the receiving water. Suspended solids also provide a medium for the transport of other adsorbed pollutants, such as

metals, which may accumulate in settled deposits that can have a long-term impact on the water column through cycles of re-suspension.

The 2011 Permit required quarterly monitoring for total suspended solids (TSS) at Outfalls 001 and 002. Reported TSS values from September 2014 through November 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 - 183.5	26.7	0 - 11.0	1.6
Outfall 002	0 - 120.0	36.3	0 - 4.0	1.1

As explained above, PMFH is subject to the effluent limitations guidelines (ELGs) for CAAP facilities (40 C.F.R. Part 451) based on the level of fish production. The narrative effluent limitations established as the technology-based ELGs were incorporated into 2011 Permit and have been included in the Draft Permit. The ELGs require implementation of effective operational measures to achieve reduced discharges of solids and other materials. The continuation of these limitations in the Draft Permit is in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1).

In the preamble to the Final Rule (see 69 Federal Register 51892, August 23, 2004), EPA explained that it established narrative requirements based on the use of best management practices (BMPs) as the basis of the regulations and continues to view BMPs as effective tools to control the discharge of pollutants from CAAP facilities. *See* 69 Fed. Reg. at 51901. In developing these ELGs, EPA concluded that "the key element in achieving effective pollution control at CAAP facilities is a well-operated program to manage feeding, in addition to good solids management. Feed is the primary source of TSS (and associated pollutants) in CAAP systems, and feed management plans are the principal tool for minimizing accumulation of uneaten feed in CAAP wastewater." 69 Fed. Reg. at 51907. A combination of settling technology and feed management control practices reflect a technology demonstrated to achieve low levels of TSS.[9]

The Draft Permit requires the Permittee to employ efficient feed management and feeding strategies to optimize the amount of feed used and minimize waste, including a site-specific feeding regimen that considers production goals, species, and rearing unit water quality, as well as careful observation of actual feeding behavior, good record keeping, and on-going reassessment. PMFH's Best Management Practices (BMP) Plan describes optimizing feed efficiency and minimizing waste. Fish are hand fed according to size and sample counts taken

[9] EPA believes that these narrative standards will consistently achieve BPT treatment levels of solids removal; however, these operational measures are not technologies that reflect the same degree of predictability as can be expected from wastewater treatment technology based on chemical or physical treatment. Therefore, and for additional reasons as stated in the preamble to the Final Rule, EPA did not establish specific numeric TSS effluent limitations based on model technology on a national basis in the ELGs. The narrative effluent limitations reflect a technology demonstrated to achieve solids removal while still giving facilities flexibility in determining how to meet them. *See* 69 Fed. Reg. 51908-9.

weekly or monthly (depending on stage) to track fish growth, adjust feeding rate, calculate estimated food conversion, and track density and loading factors. Feeding rates are based on reference rates developed for salmonids in combination with specific conditions at the hatchery as determined by the Superintendent. Hatchery staff checks pools after each feeding to observe if fish have consumed all feed provided and, if not, feeding rates are adjusted accordingly. The Draft Permit also requires the Permittee to use a low phosphorus feed. In July 2019, PMFH switched to a 0.9% phosphorus feed, which is a 10% reduction from the feed formerly used at the Facility. The Draft Permit requires the Permittee to report the feed conversion ratio (FCR) for each Outfall. FCR is a measure of how much feed is used to grow fish; the lower the FCR, the more efficient the feed management at the hatchery. Reporting of the FCR also ensures the hatchery is in compliance with the recordkeeping requirements established in Part I.C.3 of the Draft Permit.

The Draft Permit requires the Permittee to minimize the discharge of accumulated solids from settling tanks, basins, and production systems. The hatchery follows specific solids collection and cleaning procedures to reduce the discharge of solids to the river. In each raceway, fish movement encourages solids to move downstream, where they collect in "quiescent" zones at the downstream end of each raceway. When in use, quiescent zones are cleaned weekly; cleaning frequency decreases to once every two weeks during winter. Cleaning involves brushing fish retaining screens/plates and removing solids from the quiescent zones with a vacuum pump.

The Draft Permit prohibits the direct discharge of cleaning water absent some form of solids removal prior to discharge. Cleaning water refers to 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. As described in Section 3.2 of this Fact Sheet, PMFH designed and installed a new solids treatment system in July 2019. In the past, the hatchery had used two bass ponds as settling ponds. Solids removed from the raceways and ponds via vacuum pump were deposited into the ponds after cleaning. A portion of the water overflowed to Outfall 002 to make room for additional deposits and discharged to Outfall 002. Since July 2019, the hatchery uses three of the circular tanks for treating solids from raceway and pond cleaning. Solids are deposited into one of two settling tanks. Each tank drains to a third, center tank via a pipe located at the surface of the settling tank. The third tank has a central drain surrounded by a sand filter, which discharges to two fabric bags set on a bed of wood chips on the ground. The treated effluent filters through the wood chips and infiltrates into the ground.

Together, focusing on solids control through implementation of feed management and proper operation of solids control structures is expected to achieve reductions in the TSS concentrations and reduce the TSS load being discharged. Quarterly TSS monitoring at PMFH over the past five years confirms that the BMPs maintain TSS concentrations at the hatchery are less than 10 mg/L and typically less than 5 mg/L (Appendix A). Although EPA ultimately determined to set non-numeric limitations for TSS in its final rule, it is informative that the Facility's TSS levels are consistent with the proposed numeric best practicable control technology current available (BPT) and best available technology (BAT) limits in the Proposed Rule for flow-through systems at CAAP facilities producing 475,000 or more pounds of fish per year. 67 Fed. Reg. at 57,926. For the Final Rule, EPA used a model to estimate pollutant loadings for different combinations of the technologies and practices included in the regulatory options considered. EPA found that feed

inputs to aquatic animal culture systems are the drivers of effluent quality discharged from CAAP facilities.[10] Thus, EPA's analysis linked feed inputs, unit pollutant load reductions of the technologies or practices representing each regulatory option, and facility attributes to derive load reduction estimates for TSS, BOD, total nitrogen, total phosphorus, and other pollutants. EPA elected not to establish numeric limits at CAAP facilities in the Final Rule. *See* 69 Fed. Reg. at 51,892. Consistent with the ELGs, the BMPs required in the 2011 Permit and continued in the Draft Permit (described in Section 5.2.1, below) are expected to adequately control the discharge of TSS from the hatchery.

The BMP requirements described in Part I.C of the Draft Permit establish a benchmark of 10 mg/L for TSS as a daily maximum concentration. As explained above, this value is consistent with levels maintains at the hatchery over the past 5 years and with the numeric limits EPA initially considered for the CAAP point source category in the Proposed Rule. *See* 67 Fed. Reg. at 57,926. Concentrations above this benchmark represent a level of concern requiring further evaluation of the BMPs and may require implementation of corrective actions to ensure that the non-numeric, technology-based limits are effectively minimizing the discharge of TSS. The Draft Permit requires weekly monitoring and reporting of TSS at Outfalls 001 and 002 in lbs/day and mg/L. If the maximum daily or average monthly TSS concentration in a reporting period exceed the TSS benchmark, the Draft Permit requires the Permittee to review its BMPs, investigate the cause of the exceedance, implement corrective actions, update the BMP Plan, and report the outcome of the investigation and resulting corrective actions to EPA and NHDES.

5.1.3 Biochemical Oxygen Demand

Biochemical oxygen demand (BOD), measures the amount of oxygen consumed by microorganisms in decomposing organic matter in water. BOD also measures the chemical oxidation of inorganic matter (i.e., the extraction of oxygen from water via chemical reaction). The rate of oxygen consumption in a waterbody is affected by several variables: temperature, pH, the presence of microorganisms, and the type of organic and inorganic material. BOD directly affects the amount of dissolved oxygen in rivers and streams. The greater the BOD, the more rapidly oxygen is depleted in the stream. Depletion of the in-stream oxygen levels cause aquatic organisms to become stressed, suffocate, and die.

The 2011 Permit required quarterly monitoring for 5-day biochemical oxygen demand (BOD) at Outfalls 001 and 002. Reported BOD values from September 2014 through November 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 – 168.1	11.2	0 – 8.0	0.6
Outfall 002	0 – 133.8	12.4	0 – 4.3	0.4

[10] 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-04-012).

As with TSS, the narrative standards and reporting requirements in the technology-based effluent limitations guidelines (ELGs) for CAAP facilities (40 C.F.R. Part 451) are the most effective way to limit the discharge of pollutants, including BOD, in CAAP wastewater. Excess feed in the production system increases the oxygen demand of the culture water. Achieving the optimal feed input will ensure that exceed feed and feces do not accumulate in the production system to be discharged with the flow through the system. Therefore, controlling solids through best management practices, including feed management and settling ponds, is the best technology to limit discharges of BOD to the receiving water. The Draft Permit requires weekly monitoring and reporting of BOD in lbs/day and mg/L.

5.1.4 pH

The hydrogen-ion concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with pH less than 7.0 S.U. are acidic and those with pH greater than 7.0 S.U. are basic. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Sudden pH changes can kill aquatic life. pH can also have an indirect effect on the toxicity of other pollutants in the water.

The 2011 Permit established pH limitations in the range of 6.5 to 8.0 S.U. based on New Hampshire WQSs at RSA 485-A:8 II, which require that "The pH for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." From September 2014 through September 2019 (Appendix A), pH ranged from 4.7 to 7.2 S.U. at Outfall 001 and from 4.7 to 7.3 S.U. at Outfall 002. The minimum pH at both outfalls is frequently lower than the minimum range of 6.5 S.U. However, the pH of the source water from the Merrymeeting Lake is also low. The *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") lists Merrymeeting Lake as impaired for pH due to atmospheric deposition. EPA evaluated weekly pH data from November 2018 through October 2019 and identified the number of events in which the minimum effluent temperature and intake pH was less than 6.5 S.U. and the number of events in which the minimum effluent pH was less than 6.5 S.U. and the difference between the effluent and background pH exceeded 0.5 S.U. The weekly pH data is included in Appendix A and summarized below.

	Minimum pH < 6.5 S.U.		Minimum pH < 6.5 S.U. *and*
	Intake	Effluent	Delta > 0.5
Outfall 001	21	27	3
Outfall 002	21	23	4

The data indicates that the pH of the Merrymeeting lake is often below the minimum water quality standard of 6.5 S.U. At both outfalls, the effluent pH is typically within 0.5 S.U. of the background pH when the effluent minimum pH is less than 6.5 S.U.

The Draft Permit requires a pH range of 6.5 to 8.0 S.U. monitored weekly by grab samples. The Draft Permit also establishes that if the discharge 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. These limitations are based on CWA § 301(b)(1)(C) and 40 CFR § 122.44(d).

5.1.5 Temperature

Section 502(6) of the Clean Water Act defines "heat" as a "pollutant." *See* 33 U.S.C. § 1362(6). Water temperature affects the metabolic and reproductive activities of aquatic organisms and can determine which fish and macroinvertebrate species can survive in a given water body. Certain cold-blooded species cannot regulate their body temperature through physiological means, so their body temperatures reflect the temperatures of the water they inhabit. Rapid increases or decreases in ambient water temperature can directly affect aquatic life, particularly fish. Ambient water temperature can indirectly affect aquatic life by influencing water quality parameters such as dissolved oxygen, by which the solubility of oxygen decreases as water temperature increases.

The Merrymeeting River is classified as a warm water fishery. The State's statutory and regulatory provisions do not specify numeric temperature criteria but do specify narrative criteria specific to thermal discharges in order to protect the existing and designated uses of the waterbody and restore and maintain the chemical, biological, and physical integrity of the State's waters and to provide for the protection and propagation of fish, shellfish, and wildlife. *See* Env-Wq 1701.01 and 1703.01(b). New Hampshire's environmental statutes and water quality standards dictate that in Class B waters, "any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class." *See* RSA 485-A:8, II and Env-Wq 1703.13(b).

The 2011 Permit required the Permittee to monitor and report the maximum daily temperature monthly concurrent with sampling for dissolved oxygen when formalin is absent. From September 2014 through November 2019 (Appendix A) the maximum daily temperature at Outfall 001 ranged from 33.8°F to 69.6°F with an average of 51.1°F. The maximum daily temperature at Outfall 002 ranged from 33.8°F to 67.8°F with an average of 49.4°F. The Draft Permit continues to require monthly temperature monitoring at Outfalls 001 and 002 concurrent with dissolved oxygen sampling when formalin is absent.

5.1.6 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).

There are several factors which make effluent dissolved oxygen a special concern in this case. These are: (1) water supply for the hatchery is drawn from a point in Merrymeeting Lake about 40 feet below the lake's surface and as a result is likely to have dissolved-oxygen levels below saturation; (2) need to aerate the raceways in the upper hatchery adjacent to the parking lot; (3) effluent flows from the hatchery make up the majority of the receiving stream's flow during low flow periods, meaning that low effluent dissolved-oxygen concentrations could depress in-stream concentrations; and (4) lack of reaeration potential in the stretch of receiving water downstream

of the hatchery, meaning that dissolved-oxygen concentrations in Merrymeeting River could be affected by the discharges from the hatchery, particularly if oxygen demand from effluent BOD_5 is significant.

The 2011 Permit required reporting the minimum daily DO concentration and percent DO saturation when formalin was absent, and the minimum daily DO concentration when formalin was present. From September 2014 through November 2019 (Appendix A), the daily minimum dissolved oxygen at Outfall 001 with formalin absent ranged from 5.4 to 14.1 mg/l with an average of 9.7 mg/L. During the single reporting period in which formalin was present at Outfall 001 (November 2017), the Permittee reported a minimum DO concentration of 8.5 mg/L. The daily minimum dissolved oxygen saturation at Outfall 001 ranged from 58% to 105% with an average of 86%. Dissolved oxygen levels never exceeded a minimum of 5 mg/L; however, dissolved oxygen saturation at Outfall 001 was below 75% saturation during 5 reporting periods.

Minimum dissolved oxygen values at Outfall 002 ranged from 6.5 to 15.4 mg/l with an average of 10.0 mg/L. When formalin was present at Outfall 002, the Permittee reported a minimum DO concentration ranging from 8.0 to 14.0 mg/L with an average concentration of 10.9 mg/L. The daily minimum dissolved oxygen saturation at Outfall 002 ranged from 65% to 117% with an average of 87%. Dissolved oxygen levels never exceeded the minimum of 5 mg/L; however, dissolved oxygen saturation at Outfall 002 was below 75% saturation during 3 reporting periods.

The Draft Permit continues to require weekly monitoring of the effluent for dissolved oxygen concentration and calculation of dissolved oxygen percent saturation. In addition, the Draft Permit requires monitoring once per day when formalin is being used.

5.1.7 Total Residual Chlorine

Chlorine and chlorine compounds are toxic to aquatic life. Free chlorine is directly toxic to aquatic organisms and can react with naturally occurring organic compounds in receiving waters to form toxic compounds such as trihalomethane. The facility may use hypochlorite solutions to clean/disinfect rearing units and hatchery equipment. However, 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 is authorized to use 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.C.4 of the Draft Permit.

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 2011 Permit established an average monthly and maximum daily TRC limit of 11 ug/l and 19 µg/l, respectively. Sampling for TRC is only conducted when Chloramine-T is in use. The Permittee has not reported use of Chloramine-T during the period beginning September 2014. As such, TRC monitoring has not been conducted on the effluent. The Draft Permit carries forward the water-quality based maximum daily and average monthly TRC limit from the 2011 Permit limits in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1). The limits are based on the freshwater acute and chronic aquatic life criteria in the New Hampshire Water Quality Criteria for Toxic Substances. *See* Env-Wq 1703.21(b). The chlorine effluent limits and daily monitoring requirement apply whenever Chloramine-T is in use at the facility.

5.1.8 Nutrients (Nitrogen and Phosphorus)

Two major nutrients found in CAAP discharges are nitrogen (in the form of nitrate, nitrite, ammonia, and organic nitrogen) and phosphorus (both solid and dissolved). Elevated concentrations of nutrients can result in eutrophication, where nutrient concentrations lead to excessive plant and algal growth, including cyanobacteria. Respiration and decomposition of plants and algae under eutrophic conditions reduce dissolved oxygen in the water and can create poor habitat for aquatic organisms.[11]

Best available technology (BAT) represents the best economically achievable performance of facilities in the CAAP industrial subcategory or category. For flow-through and recirculating systems that produce more than 100,000 pounds or more per year of aquatic animals, EPA established BMP requirements for the control of conventional, toxic, and non-conventional pollutants, including total nitrogen and total phosphorus. 40 C.F.R. § 451.12. See also 69 Fed. Reg. at 51895. The Draft Permit includes these technology-based, non-numeric BMP requirements.

New Hampshire water quality standards require that "[a]ll surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters. All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters." Env-Wq 1703.01(b) & (c). Class B waters, such as the Merrymeeting River, shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring, and existing discharges containing phosphorus or nitrogen, or both, which encourage cultural eutrophication shall be treated to remove the nutrient(s) to ensure attainment and maintenance of water quality standards. Env-Wq 1703.01(b) & (c). "Cultural eutrophication" is defined in the NHWQS as "the human-induced addition of wastes that contain nutrients to surface waters, resulting in excessive plant growth or a decrease in dissolved oxygen, or both." Env-Wq 1702.15. New Hampshire has not prescribed specific methodologies for deriving numeric nutrient limitations that correspond to its narrative criteria.

[11] 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 Office of Water. EPA-821-R-04-012.

As discussed in Section 4.1 above, the Merrymeeting River is not currently listed for any water quality impairments, however, two downstream impoundments, Jones Dam Pond and Downing Pond, are listed in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") a Category 5 "Waters Requiring a TMDL" and Marsh Pond, the first pond downstream of the hatchery, is listed in the draft 2018 303(d) List as a Category 5 . In all cases, the Primary Contact designated use is listed as impaired and the pollutant requiring a TMDL is cyanobacteria hepatotoxic microcystins. Excessive amounts of nitrogen and phosphorus can stimulate growth of cyanobacteria and contribute to harmful algal blooms such as the blooms that have been documented in ponds downstream from the hatchery in recent years.

Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter; 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; 6) producing toxic cyanobacteria during certain algal blooms. Cultural (or accelerated) eutrophication is the term used to describe dense and excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. Discharges from municipal wastewater treatment plants, certain industrial facilities, agriculture runoff, and stormwater are examples of human-derived (i.e. anthropogenic) sources of nutrients in surface waters.

The 2011 Permit required quarterly monitoring of total phosphorus (TP). Reported TP values from September 2014 through September 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 – 14.1	1.2	0 – 0.78	0.068
Outfall 002	0.8 – 3.1	1.6	0.02 – 0.09	0.05

In December 2018, PMFH reported a maximum daily, 24-hour composite TP concentration of 0.78 mg/L. This value is nearly 7 times higher than the second-highest reported concentration (0.108 mg/L in January 2012). Because this TP concentration was unusually high, the Permittee took a second TP composite during the month and reported a maximum concentration of 0.013 mg/L. Using the mean of the two values (0.04 mg/L) for that month results in a mean TP concentration of 0.05 mg/L at Outfall 001 from September 2014 through September 2019. In addition, EPA requested that the Permittee increase monitoring frequency for TP to twice monthly from December 2016 through April 2017, once per month from May 2017 through September 2017, and twice per month from October 2017 through November 2017. During months in which two samples were collected, at least one of the monthly samples was taken during a cleaning event. The Permittee reported TP concentration for each sampling date, which

is presented in Appendix B. From December 2016 through November 2017, the TP concentration at Outfall 001 ranged from 0.02 to 0.09 mg/L with an average of 0.04 mg/L. The TP concentration at Outfall 002 ranged from 0.03 to 0.09 mg/L with an average of 0.05 mg/L. Finally, the community, NHDES, and EPA obtained downstream ambient data for TP and chlorophyll-a (Appendix C). This data was used in the Lake Loading Response Model (described below and in Appendix D) to predict phosphorus concentrations in the Merrymeeting River.

Env-Wq 1703.03 requires that surface waters be free of substances which float as foam, debris, or scum; produce odor, taste, or turbidity making the water unsuitable for the designated use; result in nuisance species; or interfere with recreational activities. The Primary Contact Recreation Use[12] in the downstream waters (Marsh, Jones, and Downing Ponds) are listed as impaired based on the presence of cyanobacteria (an indicator for primary contact recreation). Excessive algal growth can also be indicated by elevated chlorophyll-a values. For freshwater assessment purposes, NHDES considers that chlorophyll-a concentrations in excess of 15 ug/L may result in excessive algal growth that interferes with recreational activities.[13] Elevated chlorophyll-a levels are caused by excessive algal growth, which is a response to elevated nutrients in the waterbody. Phosphorus is widely considered the limiting nutrient for plant growth in freshwater lakes and rivers.

Limitations more stringent than promulgated technology-based effluent limitations guidelines are required where necessary to achieve water quality standards. 40 C.F.R. § 122.44(d)(1). In this case, the non-numeric, technology-based BMPs from the effluent limitation guidelines for CAAP facilities are not sufficiently controlling phosphorus to meet water quality standards in the downstream receiving waters. The cold, high-quality source water from the Merrymeeting Lake is low in TP (0.006 mg/L or less) and the effluent discharged from the hatchery outfalls is, on average, about 0.05 mg/L (Appendix A), which is a substantial increase from the intake concentration. In addition, the flow from Merrymeeting Lake forms the headwaters of the Merrymeeting River. Much of this flow is routed through the hatchery (with the exception of spring and fall lake drawdown) and during summer all of the flow to the Merrymeeting River is from the hatchery. See 2019 Merrymeeting River & Lake Watershed Plan Figure 3-8 (at 33). The hatchery is the largest contributor of phosphorus to the system, which is experiencing severe water quality impairments related to excessive phosphorus loading. For these reasons, EPA has determined that the addition of phosphorus from the hatchery to the impaired waterbody has the reasonable potential to cause or contribute to an in-stream excursion above the narrative criteria discussed above. *See* 40 C.F.R. § 122.44(d)(1)(ii). A target value for total phosphrous is used as a surrogate to address impairments related to the presence of cyanobacteria. Establishing limitations for total phosphorus in the Draft Permit will address the discharge of nutrients and, therefore, the impairment to the Primary Contact Recreation designated use in Marsh, Jones, and Downing Ponds.

New Hampshire has not established a numeric water quality standard for total phosphorus. In

[12] NHDES defines Primary Contact Recreation Designated Use as waters that are suitable for recreational uses that require or are likely to result in full body contact and/or incidental ingestion of water. *See* NHDES 2016 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology.
https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/documents/r-wd-17-08.pdf
[13] *Id*.

accordance with 40 C.F.R. § 122.44(d), "Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits using one or more of the following options…" The regulations provide that EPA may establish effluent limitations on an indicator parameter for the pollutant of concern provided that:

> (1) The permit identifies which pollutant(s) are intended to be controlled by the use of the effluent limitation;
> (2) The fact sheet required by § 124.56 sets forth the basis for the limit, including a finding that compliance with the effluent limit on the indicator parameter will result in controls on the pollutant of concern which are sufficient to attain and maintain applicable water quality standards;
> (3) The permit requires all effluent and ambient monitoring necessary to show that during the term of the permit the limit on the indicator parameter continues to attain and maintain applicable water quality standards; and
> (4) The permit contains a reopener clause allowing the permitting authority to modify or revoke and reissue the permit if the limits on the indicator parameter no longer attain and maintain applicable water quality standards.

40 C.F.R. § 122.44(d)(1)(vi)(C).

New Hamshire has established a series of use-specific assessment criteria used to identify and list waters for impairment of designated uses under Sections 305(b) and 303(d) of the CWA. In this case, the source of the impairment in Marsh Pond is cyanobacteria. As explained above, NHDES considers that the presence of cyanobacteria and elevated chlorophyll-a values (in excess of 15 ug/L for freshwater assessment purposes) interferes with recreational activities. Elevated chlorophyll-a and algal growth result from excessive nutrients; phosphorus is the limiting nutrient for plant growth in freshwater lakes and rivers. Therefore, EPA is deriving a numeric phosphorus limit as an indicator parameter for cyanobacteria (and chlorophyll-a) in order to address the impairment for primary contact recreation designated uses and meet the narrative water quality standards at Env-Wq 1703.03. In addition, limiting phosphorus is also consistent with the narrative water quality standards for nutrients at Env-Wq 1703.14.

In the absence of numeric criteria for phosphorus, EPA typically uses nationally recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus. EPA has published national guidance documents that contain recommended total phosphorus levels and other indicators of eutrophication. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends that in-stream phosphorus concentrations not exceed 50 µg/L in any stream entering a lake or reservoir, 100 µg/L for any stream not discharging directly to lakes or impoundments, and 25 µg/L within a lake or reservoir. EPA has applied the effects-based Gold Book threshold as an in-stream target and developed water quality-based effluent limitations to meet this goal in NPDES permits in for wastewater treatment plants in New Hampshire. See, for example, NH0100111, NH0100544, NH0100447. In addition to the Gold Book criteria for phosphorus, EPA established Ecoregional Nutrient Criteria as part of an effort

to reduce problems associated with excess nutrients in water bodies in specific areas of the country. These criteria represent conditions in waters within ecoregions that are minimally impacted by human activities, and thus free from the effects of cultural eutrophication. The recommended total phosphorus criteria in Ecoregion VIII (Nutrient Poor, Largely Glaciated Upper Midwest and Northeast), where the hatchery is located, is 10 µg/L.[14] The Gold Book criteria were developed from an effects-based approach versus the more stringent ecoregional criteria, which were developed on the basis of reference conditions. The effects-based approach is directly associated with an impairment to a designated use (i.e., fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. As explained in the Gold Book, another method to control the inflow of nutrients, particularly phosphorus, into a lake is to establish an annual load to the receiving water.

In this case, EPA also looked to methodology used by NHDES in its Total Maximum Daily Load (TMDL) Program. TMDLs address impaired waters by establishing the maximum amount of a pollutant that a waterbody can receive and still support designated uses. There is no TMDL for the impairments of the primary contact recreation designated use related to cyanobacteria in Marsh Pond or the impoundments downstream from the hatchery. NHDES has, however, completed a number of TMDLs for New Hampshire lakes with impairments similar to those in the Merrymeeting River watershed, including phosphorus, chlorophyll-a, and cyanobacteria. See, for example, approved TMDLs for Phillips Pond, Webster Lake, and Captain Pond. NHDES uses water quality modeling to evaluate the nutrient loading capacity of lakes on an annual basis. The model NHDES uses is a land use export coefficent model (the ENSR-LRM methodology). Inputs to the model can be manipulated to determine the effects of various nutrient sources on the predicted ambient phosphorus concentration and associated response variables (e.g., chlorophyll-a and probability of algal blooms).

Additionally, the Merrymeeting Cyanobacteria Steering Committee (MCSC), in coordination with its contractor, developed a watershed model based on the ENSR-LRM methodology for the Merrymeeting River for the purposes of developing its Watershed Management Plan. *See* September 2019 Merrymeeting River and Lake Watershed Management Plan (2019 WMP) and April 2019 Merrymeeting River and Lake -Lake Loading Response Model Report (2019 LLRM Report). The mass-based effluent limits for phosphorus in the Draft Permit were informed by the LLRM for the Merrymeeting River and Lake Watershed developed for the MCSC and NHDES TMDL methodology. Documentation for the ENSR-LRM is included as Appendix B to NHDES Lake Phosphorus TMDLs, including the TMDL for Phillips Pond. An explanation of how the Merrymeeting River LLRM was used to inform numeric effluent limits in the Draft Permit is included as Appendix D to this Fact Sheet.

In Lake TMDLs for waterbodies with nutrient-related impairments, such as Marsh, Jones, and Downing Ponds, NHDES sets a total phosphorus in-lake concentration target of 12 ug/L. This in-lake target concentration is the predicted TP concentration for mesotrophic lakes and will result

[14] Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII (EPA December 2000)

in attainment of surface water quality criteria for chlorophyll-a, dissolved oxygen, and cyanobacteria.[15] According to the 2019 WMP, NHDES assessed Marsh Pond as eutrophic in 1986, Jones Pond as mesotrophic in 1986, and Downing Pond as eutrophic in 2003. *See* 2019 WMP at 25. The 2019 WMP also demonstrates that, based on current conditions, TP and chlorophyll-a in Marsh, Jones, and Downing Ponds occasionally exceed NHDES thresholds for eutrophic lakes (11 µg/L chl-a and 28 µg/L TP). *See* 2019 WMP Figure 3-1 at 19. The 2019 WMP used the model to predict pre-development phosphorus loads in Marsh Pond and the downstream impoundments and determined that pre-development conditions would be, at a minimum, consistent with mesotrophic lakes.

As EPA explains in Appendix D, the Draft Permit includes an annual TP load limit of 395 lbs/year with an average monthly phosphorus limit of 25 ug/L (0.025 mg/L) at Outfalls 001 and 002 from October 1 through May 31. This represents a 53% reduction in the current estimated annual load from the hatchery based on the LLRM. In addition, the Draft Permit includes a seasonal (June – September) average monthly phosphorus limit of 14 ug/L (0.018 mg/L) at Outfalls 001 and 002 and a seasonal TP load limit of 87 lbs. This more stringent monthly average effluent limitation and seasonal load limit is designed to be protective of designated uses in Marsh Pond during the summer growing season, when TP loads from the hatchery can be high (e.g., in July 2017, the maximum daily TP concentration at Outfall 001 was 90 ug/L, Appendix B) and all of the flow from the Merrymeeting Lake flows through the hatchery's outfalls without dilution. The Draft Permit limits are predicted to achieve an annual average target concentration of 12 ug/L in Marsh Pond and an algal bloom probability of 0.2% at chlorophyll-a greater than 15 µg/L, which is NHDES's impairment threshold for the primary contact recreation designated use (Appendix D). The Draft Permit limits are established to meet the predicted in-stream target TP and response variable (chl-a) in order to achieve water quality conditions to address the impairments for cyanobacteria in Marsh Pond and the downstream impoundments.

The TP limitations in the Draft Permit are crucial to advancing towards the goal of attaining water quality standards for designated uses in Marsh Pond, because the hatchery is the primary source of phosphorus loading to the system. However, there are other phosphorus sources that will also need to be addressed. The 2019 WMP demonstrates that Marsh and Jones Ponds demonstrate evidence of significant internal loading, which will continue to impact the watershed even as the hatchery implements improvements to meet the new Draft Permit limits. *See* 2019 WMP at 21. The Draft Permit requires weekly monitoring for TP at each outfall and establishes ambient monitoring requirements for Marsh Pond to ensure that the permit limits are sufficient to attain and maintain applicable water quality standards. See 40 C.F.R. § 122.44(d)(1)(vi)(C)(3). The hatchery may choose to coordinate the ambient monitoring required by the Draft Permit with annual water quality monitoring program proposed by the MCSC in the 2019 WMP. See 2019 WMP at 48-9.

[15] See NHDES 2018 Final TMDL for Phosphorus for Phillips Pond, Sandown, NH: Appendix A Methodology for Determining Target Criteria. https://www.des.nh.gov/organization/commissioner/pip/publications/documents/r-wd-18-11.pdf
See also NHDES 2016 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/documents/r-wd-17-08.pdf

Nitrogen

The 2011 Permit required quarterly monitoring for total nitrogen (TN). Total Nitrogen is the sum of Total Kjeldahl Nitrogen (TKN) (ammonium, organic and reduced nitrogen) and nitrate-nitrite. It is derived by individually monitoring for organic nitrogen compounds, ammonia, nitrate, and nitrite and adding the components together. Reported TN values from September 2014 through September 2019 are presented in Appendix A and summarized below.

	lbs/day		mg/L	
	Range	Mean	Range	Mean
Outfall 001	0 – 16.5	6.4	0 – 1.03	0.39
Outfall 002	0 - 88	24.9	0 – 2.3	0.73

As explained above, PMFH is subject to the effluent limitations guidelines (ELGs) for CAAP facilities (40 C.F.R. Part 451) based on the level of fish production. The narrative effluent limitations established as the technology-based ELGs were incorporated into the 2011 Permit and have been included in the Draft Permit. The ELGs require implementation of effective operational measures to achieve reduced discharges of solids and other materials. The continuation of these limitations in the Draft Permit is in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1).

The Draft Permit includes weekly monitoring and reporting for total nitrogen. The monitoring data will continue to provide additional information on the discharge of nitrogen and the effectiveness of the BMPs to minimize the discharge of nutrients to the Merrymeeting River. In addition, the anticipated improvements that will be necessary to meet the water quality-based effluent limits for total phosphorus described above will also reduce the total nitrogen load to the Merrymeeting River.

5.1.9 Ammonia

Ammonia (NH_3) is the unionized form of ammonia nitrogen. Elevated levels of ammonia can be toxic to aquatic life. Temperature and pH affect the toxicity of ammonia to aquatic life. The toxicity of ammonia increases as temperature increases and ammonia concentration and toxicity increase as pH increases. Ammonia can affect fish growth, gill condition, organ weights and hematocrit, and can result in excessive plant and algal growth, which can cause eutrophication. Ammonia can also affect dissolved oxygen through nitrification, in which oxygen is consumed as ammonia is oxidized. Low oxygen levels can then, in turn, increase ammonia by inhibiting nitrification. Total ammonia-nitrogen concentrations in surface waters tends to be lower during summer than during winter due to uptake by plants and decreased ammonia solubility at higher temperatures.

The 2011 Permit required quarterly monitoring for ammonia. From September 2014 through September 2019 (Appendix A), daily maximum total ammonia at Outfall 001 ranged from 0 to

0.33 mg/L with an average of 0.11 mg/L. The maximum daily total ammonia values at Outfall 002 ranged from 0.08 to 0.39 mg/l with an average of 0.2 mg/L.

The New Hampshire Water Quality Standards for ammonia are found at Env-Wq 1703.25 and 26. Based on pH data reported in the DMRs under cold water conditions (October 1 through April 30), the acute ammonia criterion is 27.86 mg/L and the chronic ammonia criterion is 3.65 mg/L. Under warm water conditions (May 1 through September 30), the acute ammonia criterion is 21.98 mg/L and the chronic ammonia criterion is 2.33 mg/L. Based on discussions with NH Fish & Game, NHDES calculated the criterion on values where salmonids in the genus *Oncorhynchus* are present. As required by Env-Wq 1705.01, 10% of the assimilative capacity of the receiving water is reserved by using a multiplying factor of 0.9 in this calculation. This results in a cold water freshwater criteria of 25.1 mg/L (acute) and 3.3 mg/L (chronic) and warm water freshwater criteria of 19.8 mg/L (acute) and 2.1 mg/L (chronic).

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of the *Technical Support Document for Water Quality-based Toxics Control* (TSD)[i] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory detection limits). For datasets of 10 or more samples, EPA used the upper bound effluent concentration at the 95th percentile of the dataset. At Outfall 002, which includes no non-detect results, EPA used a lognormal distribution to calculate the 95th percentile; for Outfall 001, which includes one non-detect result, EPA used a delta-lognormal distribution to calculate the 95th percentile. At Outfall 001, the estimated 95th percentile daily maximum concentration is 0.17 mg/L. In cases of low flow, where there is little to no flow over the dam at Merrymeeting Lake, the discharge from Outfall 001 is essentially the headwater of the Merrymeeting River. The estimated 95th percentile ammonia concentration for Outfall 001 is less than the acute and chronic criteria (times 0.9). Based on this analysis, there is no reasonable potential for the hatchery effluent from Outfall 001 with no dilution to cause or contribute to an excursion of the calculated water quality standards for ammonia. At Outfall 002, the estimated 95th percentile daily maximum concentration is 0.38 mg/L.

At the hatchery, the discharge from Outfall 001 represents the upstream flow for Outfall 002 because, at times of low flow, all of the water from the Merrymeeting Lake flows through the hatchery. The effluent discharged from Outfall 001 becomes the receiving water for Outfall 002. EPA used the calculated 95th percentile of Outfall 001 effluent data at the minimum observed flow to represent critical low flow (1.26 MGD) and the calculated 95th percentile of Outfall 002 effluent data at the permitted maximum flow (4 MGD) to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$Q_s C_s + Q_e C_e = Q_d C_d$$

Where:

C_d = downstream concentration
C_s = upstream concentration (95th percentile of Outfall 001 effluent concentration)
C_e = effluent concentration (95th percentile of Outfall 002 effluent concentrations)
Q_s = upstream flow (Minimum Outfall 001 effluent flow)
Q_e = Maximum Outfall 002 daily effluent flow
Q_d = downstream flow ($Q_s + Q_e$)

Solving for the receiving water concentration downstream of the discharge (C_d) yields:

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

$$C_d = \frac{(1.26\ \text{MGD} * 0.17\ \text{mg/L}) + (6.0\ \text{MGD} * 0.38\ \text{mg/L})}{(1.26\ \text{MGD} + 6.0\ \text{MGD})}$$

Assuming an in-stream ammonia concentration of 0.17 mg/L (from Outfall 001), EPA calculated a combined, downstream ammonia concentration at Outfall 002 of 0.34 mg/L. This value is less than the acute and chronic criteria (times 0.9).

EPA also evaluated reasonable potential by calculating the combined ammonia concentration as if the two outfalls combined prior to discharge, rather than using the Outfall 001 flow as the receiving water for Outfall 002. Using the mass-balance equation from above with the estimated 95th percentile ammonia concentrations and maximum observed flow at each outfall over the previous 5 years, the resulting ammonia concentration in the discharge is:

$$C_d = \frac{(2.6\ \text{MGD} * 0.17\ \text{mg/L}) + (6.0\ \text{MGD} * 0.38\ \text{mg/L})}{(2.6\ \text{MGD} + 6.0\ \text{MGD})}$$

$$C_d = 0.32\ \text{mg/L}$$

Based on the analysis, there is no reasonable potential for the hatchery effluent to cause or contribute to an excursion of the calculated water quality standards for ammonia. The Draft Permit requires monthly monitoring for ammonia at Outfalls 001 and 002.

5.1.10 Hydrogen Peroxide

The facility is authorized to use a hydrogen peroxide solution (35% PEROX-AID®) 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 Water Quality Standards 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 criteria. The FDA determined that a corresponding chronic benchmark was unnecessary.

The 2011 Permit established a maximum daily hydrogen peroxide limit of 0.7 mg/l. Sampling for hydrogen peroxide is only conducted when in use (i.e., when PEROX-AID® is in use). The Permittee has not reported use of PEROX-AID® since prior to January 2012. As such, hydrogen peroxide monitoring has not been conducted on the effluent. The Draft Permit carries forward the water-quality based maximum daily hydrogen peroxide limit from the 2011 Permit limits in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1). The facility monitors residual peroxide using Hach test kit HYP-T #2291700, which has a minimum detection limit of 0.2 mg/l.

5.1.11 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 active external protozoa and monogenetic trematodes on all finfish species. Because it is formulated to selectively kill or remove certain attached organisms, but not the finfish themselves when properly applied, formalin is more toxic to invertebrate species than to vertebrates. When setting the necessary permit limits to protect the receiving water's aquatic environment from the effects of formalin in a discharge, it is more important to develop limits to protect invertebrate species because they are more sensitive to the effects of formaldehyde. In the receiving waters, these invertebrates are an integral part of the food chain for finfish.

Formalin use must be consistent with U.S. Food and Drug Administration (FDA) labeling instructions as per 21 C.F.R. § 529.1030. While the prophylactic use of formalin (i.e., drugs and chemicals used to prevent specific disease(s) in the absence of their symptoms) is not mentioned in those FDA regulations, EPA will only allow its use under the extra-label provisions of the Federal Food, Drug and Cosmetic Act as a Best Management Practice (BMP) to control the excessive use of drugs.

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

The 2011 Permit established a maximum daily formaldehyde limit of 4.6 mg/l and average monthly limit of 1.6 mg/l. Sampling for formaldehyde is only conducted when formalin is in use. The Permittee reported discharges associated with the use of formalin in one reporting period at Outfall 001 and four reporting periods at Outfall 002. The Permittee reported a maximum daily formaldehyde concentration of 75 mg/L at Outfall 002 in September 2016. On September 27, 2016 the Permittee reported that the exceedance of the maximum daily formaldehyde limit was due to operator error and that steps would be taken to ensure that the Facility met the limit consistently.[16] *See* Letter from E. Malone of New Hampshire Fish and Game to J. Hilton on EPA. Formalin was used three additional times at Outfall 002. Maximum daily formaldehyde concentrations ranged from 0 to 0.2 mg/L. At Outfall 001, the Permittee reported a maximum daily formaldehyde concentration of 8.8 mg/L in November 2017. Again, the Permittee identified the non-compliance by letter to EPA dated November 16, 2017 and explained the need for formalin use to reduce mortality associated with an outbreak of parasitic infection. See Letter from E. Malone of New Hampshire Fish and Game to J. Hilton on EPA. The Draft Permit carries forward the water-quality based formaldehyde limits from the 2011 Permit limits in accordance with anti-backsliding requirements found in 40 C.F.R. § 122.44(1).

5.2 Special Conditions

5.2.1 Best Management Practices

Best management practices (BMPs) may be expressly incorporated into a permit on a case-by-case basis where it is determined that they are necessary to achieve effluent limitations and standards or to carry out the purpose and intent of the CWA under § 402(a)(1). BMPs may be necessary to control or abate the discharge of pollutants when: 1) authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) authorized under section 402(p) of the CWA for the control of storm water discharges; 3) numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of

[16] Further discussions with the hatchery operator demonstrated that the effluent sample for the September 2016 event was conducted at a location that was not representative of the final effluent. The sampling event is best represented with an appropriate No Data Indicator Code rather than as a numerical entry. An edit to the September 2016 Net DRM entry is pending.

the CWA. *See* 40 C.F.R. 122.44(k). Pollutants may be present because they are generated during Facility operations, which could result in significant amounts of these pollutants reaching waters of the United States via discharges of wastewater.

In this case, the Draft Permit requires the selection, design, installation, and implementation of control measures for wastewater associated with the Facility operations to comply with the non-numeric technology-based effluent limits in the Draft Permit. These non-numeric limitations are consistent with the limitations specified in 40 C.F.R. Part 451 Subpart A for flow-through and recirculating systems in the Concentrated Aquatic Animal Production Point Source Category. Requirements include:

- *Solids control* including feed management and feeding strategies to minimize potential discharges of uneaten feed, accumulated solids, and disposal of animal mortalities;
- *Materials storage* including proper storage of drugs, pesticides, and feed, and procedures for spill prevention and disposal;
- *Structural maintenance* including route inspections and maintenance;
- *Recordkeeping* including documenting feed amounts, numbers/weight of aquatic animals, and frequency of inspections and repairs;
- *Training* including proper spill clean-up and disposal and operation and cleaning of wastewater treatment systems, feeding procedures, and use of equipment.

These non-numeric effluent limitations support, and are equally enforceable as, the numeric effluent limitations included in the Draft Permit. The purpose of these requirements is to reduce or eliminate the discharge of pollutants to waters of the United States. These requirements, together with the numeric limits, will also ensure that discharges from the Facility will meet State WQSs pursuant to CWA § 301(b)(1)(C) and 40 C.F.R. 122.44(d)(1). Unless otherwise stated, the Permittee may select, design, install, implement and maintain BMPs as the Permittee deems appropriate to meet the permit requirements. The selection, design, installation, implementation and maintenance of control measures must be in accordance with good engineering practices and manufacturer's specifications.

In addition to the BMP Plan requirement, the Draft Aquaculture General Permit establishes a benchmark requirement TSS. The benchmark is not an effluent limitation. The benchmark is the pollutant concentrations above which EPA Region 1 has determined represent a level that requires further evaluation of the BMP Plan to determine whether BMPs are effectively reducing solids concentrations in the discharge. See Section 5.1.2 of this Fact Sheet for additional information on the benchmark monitoring requirements.

5.2.2 Discharges of Chemicals and Additives

Chemicals and additives include approved and conditionally approved aquaculture drugs and indications used to maintain fish health. Only drugs and chemicals approved by the U.S. Food and Drug Administration (FDA) for use in aquaculture or considered low regulatory priority by the FDA are used at the hatchery. The Draft Permit allows the discharge of only those chemicals and additives specifically disclosed by the Permittee to EPA and the State. The following chemicals and additives were disclosed to EPA:

- Ovadine® (disinfectant for fish eggs)
- Florfenicol to control fish mortality related to parasites (Aquaflor®)
- Hydrogen peroxide to control bacterial gill disease (35% Perox-Aid®)
- Chorionic gondadotropin to improve spawning (Chorulon®)
- Chloramine-T to control bacterial gill disease (Halamid®)
- Formalin to control parasites (Parasite-S, Formalin-F, Formacide-B, Paracide-F)
- Romet® 30 and Romet® TC to control furunculosis
- Oxytetracycline hydrochloride to mark skeletal tissues (Pennox® 343)
- Oxytetracycline dihydrate to control disease (Terramycin® 200)
- Tricaine methanesulfonate to immobilize fish (Tricaine-S®)

Low Regulatory Priority Chemicals

- Acetic Acid to control parasites
- Calcium chloride for egg hardening
- Carbon dioxide gas as anesthetic
- Fullers Earth
- Garlic (whole form)
- Magnesium sulfate
- Onion (whole form)
- Papain
- Potassium chloride
- Povidone iodine
- Sodium bicarbonate
- Sodium chloride
- Sodium sulfite
- Thiamine hydrochloride
- Urea and tannic acid

However, EPA recognizes that chemicals and additives in use at a Facility may change during the term of the permit. As a result, the Draft Permit includes a provision that requires the Permittee to notify EPA and the State in writing of the discharge a new chemical or additive; allows for EPA and State review of the change; and provides the factors for consideration of such changes. The Draft Permit specifies that for each chemical or additive, the Permittee must submit the following information, at a minimum, in writing to EPA and the State:

- Product name, chemical formula, and manufacturer of the chemical/additive.
- Purpose or use of the chemical/additive.
- Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive.
- The frequency (e.g., hourly, daily), magnitude (e.g., maximum and average), duration (e.g., hours, days), and method of application for the chemical/additive.
- If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC_{50} in percent

for aquatic organism(s)).

The Permittee must also provide an explanation which demonstrates that the discharge of such chemical or additive: 1) will not add any pollutants in concentrations which exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

The discharge of any chemical or additive, including chemical substitution, which was not reported in the application submitted to EPA and the State or provided through a subsequent written notification submitted to EPA and the State, as described above, other than additives used in accordance with the BMPs in Part I.C.2 of the Draft Permit. Discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA and the State unless otherwise notified by EPA and/or the State.

5.3 Compliance Schedule

A NPDES Permit may, when appropriate, specify a schedule of compliance leading to compliance with CWA and regulations. 40 C.F.R. § 122.47(a). The permitting authority must require compliance as soon as possible but not later than the applicable statutory deadline under the CWA. 40 C.F.R. § 122.47(a)(1). *See also* CWA § 301(b)(1)(C). New Hampshire surface water quality regulations allow for schedules of compliance in NPDES Permits when the permittee cannot comply with the permit limits or other requirements immediately upon issuance of the permit and when the compliance schedule is provided to afford the permittee adequate time to comply with permit requirements or limitations that are based on new, newly interpreted, or revised water quality standards that became effective after issuance of the original discharge permit and after July 1, 1977. *See* Env-Wq 1701.03.

The Draft Permit establishes a new, water-quality based effluent limitation for total phosphorus as an indicator parameter for the pollutant of concern, cyanobacteria, which NHDES has indicated is the source of impairment of the primary contact designated use in Marsh Pond and the downstream impoundments. For the issuance of this Draft Permit, EPA has interpreted the narrative water quality criteria at Env-Wq 1703.03(c) and 1703.14 to establish numeric effluent limitations at the hatchery's outfalls. *See* 40 C.F.R. § 122.44(d)(1)(vi). PMFH will likely have to design and implement major modifications at the Facility to achieve the effluent limits, which may include best management practices, operational changes, and/or treatment technology. In other words, the hatchery will likely not be able to comply with the total phosphorus limits immediately upon issuance of the permit. The Draft Permit establishes a compliance schedule for the hatchery to comply with the total phosphorus effluent limitations within 60 months of the effective date of the permit. This schedule allows time for completing a study and engineering design of the technological improvements, construction of the technology, and securing funding for the improvements considering the New Hampshire Legislature budget cycle. The schedule establishes interim requirements and reporting milestones between the effective date of the permit and the final compliance deadline. *See* 40 C.F.R. § 122.47(a)(3) and (4).

Finally, New Hampshire water quality standards at Env-Wq 700 establish standards for the design and construction for sewerage and wastewater treatment facilities. A wastewater

treatment system is one possible option for the hatchery to reduce phosphorus concentrations consistent with the Draft Permit limits. In the event that the hatchery elects to design and install a wastewater treatment system, the Draft Permit establishes a compliance schedule in Part I.E (State Conditions) that requires the Permittee to meet certain requirements in accordance with standards at Env-Wq 700.

6.0 Federal Permitting Requirements

6.1 Endangered Species Act

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

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

The Federal action being considered in this case is EPA's proposed NPDES permit for the Facility's discharges of pollutants. The Draft Permit is intended to replace the 2011 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species, and initiates consultation with the Services, when required under § 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the action area to determine if EPA's proposed NPDES permit could potentially impact any such listed species. Two federally listed threatened or endangered species have been identified for the action area: the northern long-eared bat (*Myotis septentrionalis*) and the small whorled pogonia (*Isotria medeoloides*).[17] According to the USFWS, the northern long-eared bat is found in "winter – mines and caves, summer – wide variety of forested habitats" and the small whorled pogonia is found in forested habitat. Neither of the federally listed species in the action area are aquatic and aquatic organisms are not prey for the northern long-eared bat. The proposed permit action will have no direct or indirect effect on either listed species.

Therefore, EPA finds that adoption of the proposed permit will have no effect on any federally-listed threatened or endangered species or its critical habitat, and consultation with NOAA Fisheries or USFWS under Section 7 of the ESA is not required.

[17] See https://ecos.fws.gov/ipac/

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et seq*., 1998), EPA is required to consult with the NOAA Fisheries 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). "Adverse impact" means any impact that 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), or site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for fish species for which federal Fisheries Management Plans exist.[16] *See* 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.

EPA has determined that the Merrymeeting River is not covered by any EFH designation as determined by the NOAA EFH Mapper or the Omnibus Amendment for Atlantic salmon designated EFH.[18] EPA's review of available EFH information indicated that this water body is not designated EFH for any federally managed species. Therefore, consultation with NOAA Fisheries under the Magnuson-Stevens Fishery Conservation and Management Act is not required.

7.0 Public Comments, Hearing Requests, and Permit Appeals

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:

Danielle Gaito
EPA Region 1
5 Post Office Square, Suite 100 (06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1297
Email: gaito.danielle@epa.gov

Prior to the close of the public comment period, any person may submit a written request to EPA and the State Agency for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held 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 in a Response to Comments document

[18] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/. Omnibus Essential Fish Habitat Amendment 2 is available at https://www.nefmc.org/library/omnibus-habitat-amendment-2.

attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

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, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 C.F.R. § 124.19.

8.0 Administrative Record

The administrative record on which this Draft Permit is based may be accessed at EPA's Boston office between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from Danielle Gaito, EPA Region 1, Water Division**,** Industrial Permits Section, 5 Post Office Square, Suite 100, Boston, Massachusetts 02109-3912 or via email to gaito.danielle@epa.gov.

Date December, 2019

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Figures

Figure 1: Location Map

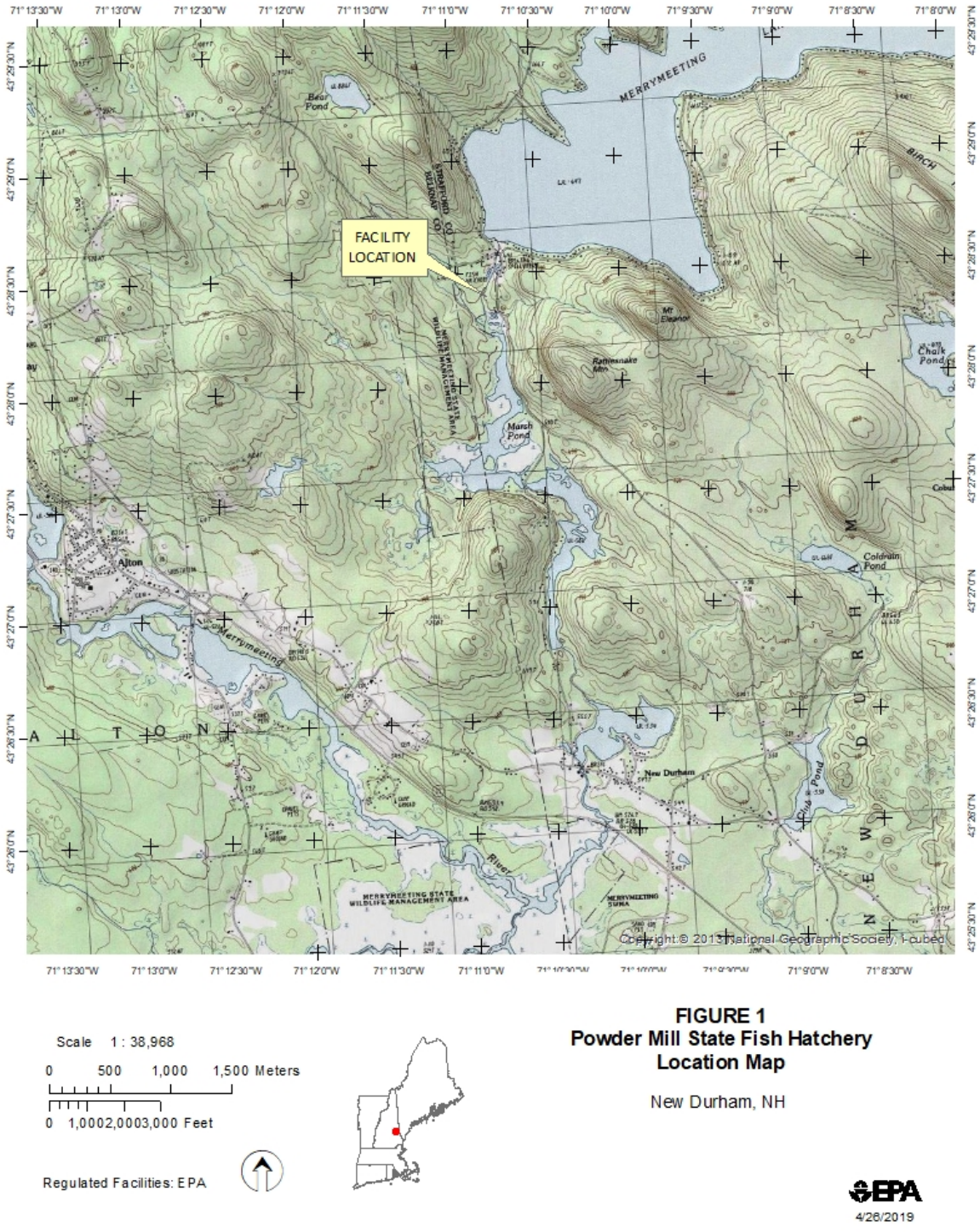


Figure 2: Site Plan

Figure 3: Schematic of Water Flow

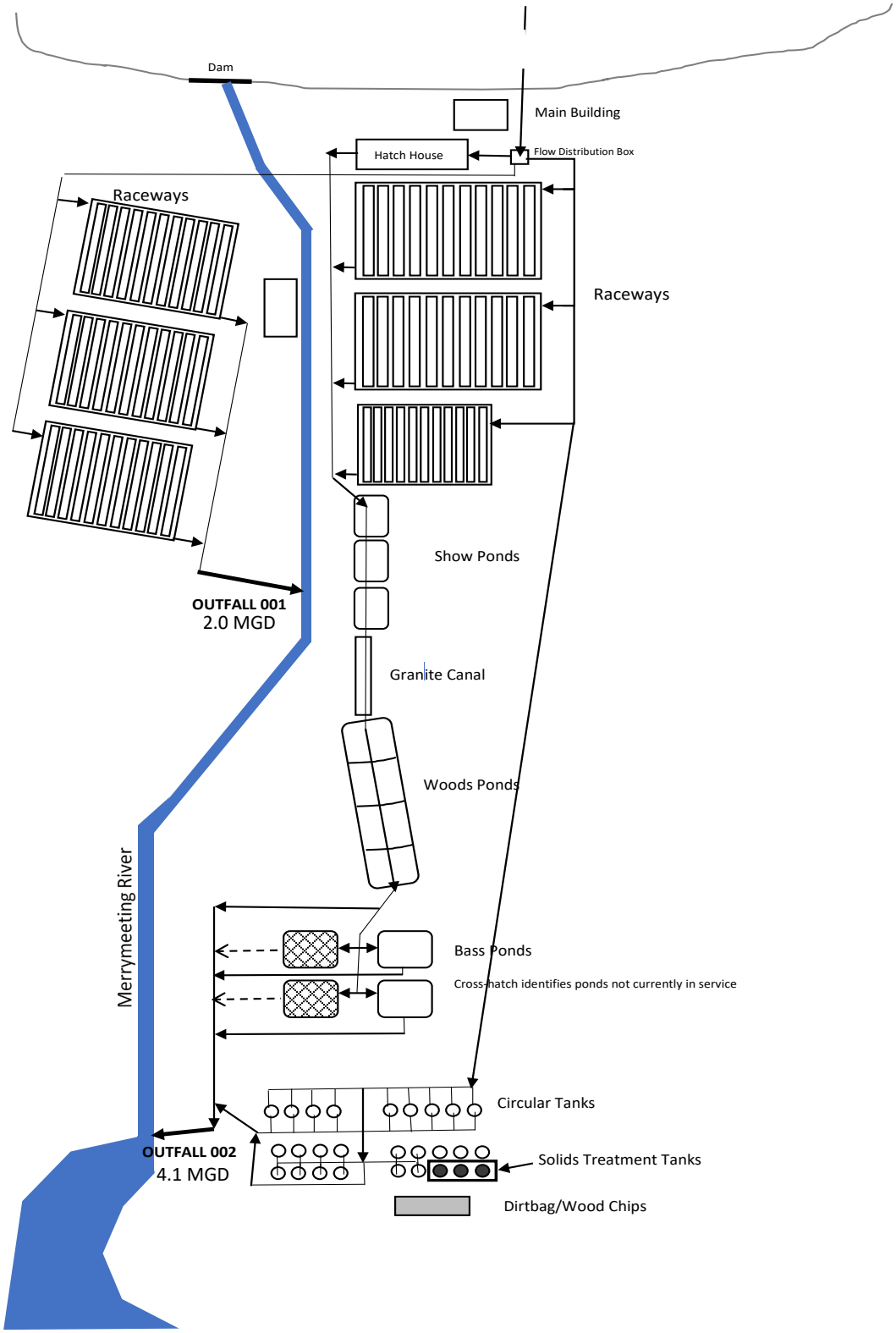
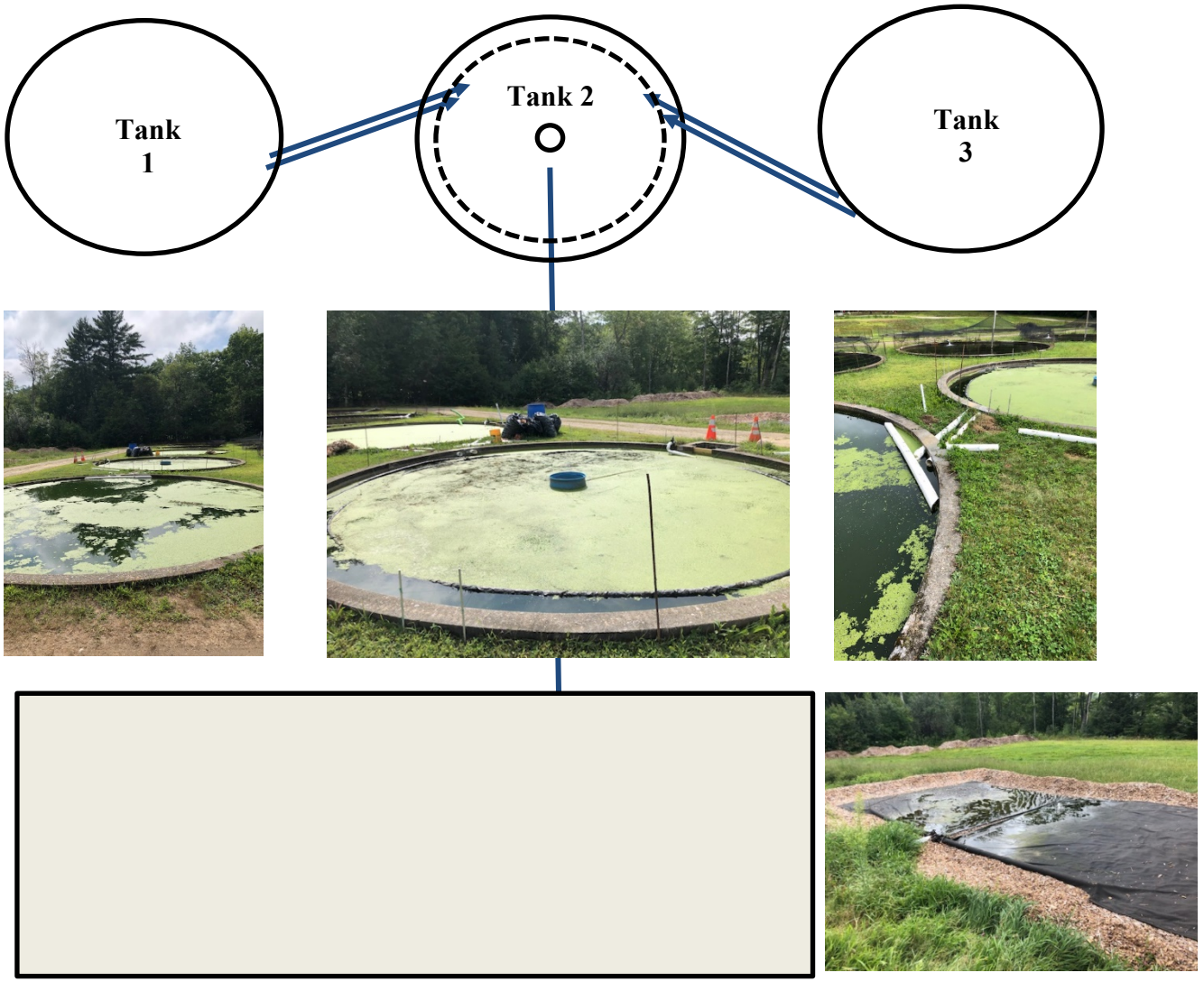


Figure 4. Schematic of Solids Treatment System



Appendices

Appendix A: Discharge Monitoring Data

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 001 Monthly Effluent Monitoring						
Parameter	**Flow rate**	**Fish on Hand**	**Fish Food Fed**	**Temperature**	**pH**	**pH**
Units	**MGD**	**lb/d**	**lb/d**	**mg/L**	**S.U.**	**S.U.**
	Mo Avg	**Mo Avg**	**Mo Avg**	**Daily Max**	**Minimum**	**Maximum**
Effluent Limitation	Report	Report	Report	Report	6.5	8.0
Minimum	1.12	20.67	13.30	33.80	4.71	5.11
Maximum	2.59	960.29	281.00	69.62	6.84	7.16
Average	1.97	480.0	83.0	51.1	5.96	6.48
No. of Violations	N/A	N/A	N/A	N/A	55	0
Monitoring Period End Date						
09/30/2014	2.17	196.0	82.7	62.6	6.5	6.7
10/31/2014	2.05	350.5	98.9	58.3	5.9	6.5
11/30/2014	1.98	469.8	95.4	53.1	6.0	6.2
12/31/2014	1.95	485.3	67.1	42.4	6.0	6.6
01/31/2015	2.12	499.7	53.5	36.7	6.3	6.4
02/28/2015	2.03	545.3	43.9	37.9	6.1	6.8
03/31/2015	2.07	496.4	36.7	39.2	5.9	6.5
04/30/2015	2.00	496.4	48.3	49.3	6.2	6.5
05/31/2015	1.88	208.5	40.3	53.1	6.1	6.5
06/30/2015	1.48	20.7	13.3	57.6	5.9	6.5
07/31/2015	1.83	71.8	42.8	61.5	5.6	6.4
08/31/2015	2.24	188.1	86.4	64.6	6.3	6.5

09/30/2015	2.20	331.1	117.7	59.9	6.3	7.2
10/31/2015	2.17	466.7	138.5	56.1	5.2	6.7
11/30/2015	2.10	620.1	124.2	51.6	6.1	6.4
12/31/2015	2.14	678.4	84.6	45.7	6.3	6.6
01/31/2016	2.10	724.5	62.1	39.6	5.8	6.5
02/29/2016	2.22	805.2	31.6	41.5	6.2	6.3
03/31/2016	1.96	781.9	48.8	41.2	5.8	6.5
04/30/2016	2.19	824.0	58.7	50.0	5.8	6.5
05/31/2016	2.19	355.6	63.1	50.7	6.0	6.4
06/30/2016	2.19	139.5	53.8	61.5	6.0	6.8
07/31/2016	1.17	107.0	281.0	65.3	5.8	6.7
08/31/2016	1.12	234.0	75.0	69.6	5.8	6.2
09/30/2016	1.49	424.0	124.0	63.5	5.4	6.0
10/31/2016	1.99	502.9	164.2	60.3	5.4	5.6
11/30/2016	1.97	762.0	154.8	53.8	5.3	5.9
12/31/2016	2.03	723.7	85.7	46.8	5.2	5.4
01/31/2017	2.02	820.0	45.5	40.5	5.2	5.5
02/28/2017	1.66	928.9	44.8	39.2	4.7	5.1
03/31/2017	1.62	913.4	45.3	41.7	4.8	5.7
04/30/2017	1.75	514.2	67.2	45.3	5.0	6.0
05/31/2017	1.84	212.8	54.0	57.0	5.3	6.3
06/30/2017	1.78	230.2	85.6	62.6	5.7	6.4
07/31/2017	1.65	180.1	123.4	68.0	5.6	5.9
08/31/2017	1.93	363.4	174.1	64.9	6.6	6.7
09/30/2017	2.00	467.8	171.1	65.1	6.5	6.6
10/31/2017	2.39	621.6	185.0	57.0	6.4	6.7
11/30/2017	2.37	750.0	151.7	53.4	6.3	6.8

12/31/2017	2.29	755.8	75.8	41.7	6.7	7.0
01/31/2018	2.25	796.5	47.9	37.4	6.3	6.9
02/28/2018	2.32	960.3	53.2	40.8	6.8	7.0
03/31/2018	2.27	885.6	55.4	43.2	5.9	6.7
04/30/2018	2.30	798.0	71.1	41.0	6.2	6.6
05/31/2018	2.08	406.0	80.1	50.5	6.0	7.1
06/30/2018	1.78	38.1	35.4	55.0	5.9	6.9
07/31/2018	1.89	136.0	45.8	60.2	5.8	6.8
08/31/2018	2.30	248.7	81.4	58.5	6.0	6.7
09/30/2018	2.59	287.0	102.4	56.5	6.5	7.1
10/31/2018	2.56	420.7	97.7	53.6	6.1	6.1
11/30/2018	2.41	459.9	64.4	43.0	6.1	6.5
12/31/2018	2.17	457.7	42.7	39.9	6.2	6.8
01/31/2019	2.03	474.4	25.3	33.8	6.6	6.9
02/28/2019	2.00	551.0	30.5	36.0	6.2	6.9
03/31/2019	1.91	521.9	37.9	35.8	6.0	6.3
04/30/2019	1.98	401.5	58.4	44.2	6.0	6.7
05/31/2019	1.94	280.7	74.9	48.0	5.8	6.8
06/30/2019	1.23	92.0	29.8	52.9	6.2	7.0
07/31/2019	1.34	171.9	51.6	58.1	6.0	6.3
8/31/2019	1.46	336.1	120.2	62.8	5.9	6.6
9/30/2019	1.75	499.5	137.1	59.7	6.2	6.6
10/31/19	1.4	810.9	147.97	55.8	6.5	6.6
11/30/19	1.62	928.07	140.13	44.6	6.3	6.6

Notes: 0 = parameter not detected; NA = not applicable

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 001
Monthly Effluent Monitoring (continued)

Parameter	Dissolved Oxygen	Dissolved Oxygen	TRC	TRC	Formaldehyde	Formaldehyde	Hydrogen Peroxide
Units	**Mg/L**	**% Saturation**	**lb/d**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
	Daily Max	**Daily Max**	**Daily Max**	**Daily Max**	**Mo Avg**	**Daily Max**	**Daily Max**
Effluent Limitation	Report	Report	0.011	0.019	1.6	4.6	0.7
Minimum	5.42	58.10	---	---	---	---	---
Maximum	14.09	104.90	---	---	3.26	8.8	---
Average	9.67	85.5	---	---	---	---	---
No. of Violations	N/A	N/A	0	0	1	1	0
Monitoring Period End Date							
09/30/2014	8.9	93.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2014	8.5	82.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2014	9.4	85.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2014	11.7	92.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2015	11.4	84.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2015	12.4	91.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2015	12.0	89.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2015	10.0	86.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2015	9.9	92.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2015	8.9	91.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2015	9.1	93.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

08/31/2015	8.8	94.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2015	8.1	82.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2015	8.3	78.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2015	9.3	82.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2015	9.1	79.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2016	10.5	83.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/29/2016	11.3	88.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2016	11.3	89.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2016	10.3	84.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2016	9.6	84.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2016	7.6	79.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2016	9.3	93.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2016	7.2	80.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2016	6.0	60.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2016	6.7	75.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2016	8.0	76.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2016	7.8	76.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2017	12.0	90.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2017	11.8	91.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2017	11.1	90.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2017	12.0	98.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2017	7.3	70.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2017	5.4	58.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2017	7.0	77.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2017	8.0	85.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2017	6.7	66.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2017	7.5	74.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

11/30/2017	8.5	78.3	NODI: 9	NODI: 9	3.26	8.8	NODI: 9
12/31/2017	9.7	78.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2018	14.1	104.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2018	10.5	81.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2018	10.1	81.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2018	10.1	81.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2018	10.2	81.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2018	10.3	95.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2018	8.1	82.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2018	9.3	91.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2018	8.8	84.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2018	8.5	79.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2018	9.8	79.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2018	12.9	100.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2019	14.0	98.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2019	13.7	99.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2019	13.7	99.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2019	9.3	85.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2019	11.2	96.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2019	10.7	98.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2019	9.8	96.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
8/31/2019	9.2	95.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
9/30/2019	8.4	83.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2019	8.0	76.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2019	10.1	83.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 001
Quarterly Effluent Monitoring

Parameter	BOD	BOD	TSS	TSS	Total Ammonia	Total Ammonia
Units	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report	Report	Report
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	168.1	8.00	183.5	11.00	4.82	0.33
Average	11.2	0.62	26.7	1.57	1.72	0.11
Monitoring Period End Date						
09/30/2014	0.00	0.00	54.29	3.00	2.71	0.15
12/31/2014	168.13	8.00	48.79	3.00	1.30	0.08
03/31/2015	0.00	0.00	0.00	0.00	1.04	0.06
06/30/2015	0.00	0.00	24.69	2.00	0.00	0.00
09/30/2015	0.00	0.00	0.00	0.00	2.93	0.16
12/31/2015	0.00	0.00	0.00	0.00	1.25	0.07
03/31/2016	0.00	0.00	0.00	0.00	0.82	0.05
06/30/2016	0.00	0.00	0.00	0.00	1.46	0.08
09/30/2016	0.00	0.00	0.00	0.00	2.11	0.17
12/31/2016	0.00	0.00	67.70	4.00	1.86	0.11
03/31/2017	0.00	0.00	94.57	7.00	1.35	0.10
06/30/2017	0.00	0.00	29.52	2.00	1.18	0.08
09/30/2017	66.72	4.00	183.48	11.00	3.34	0.20
12/31/2017	0.00	0.00	37.70	2.00	1.88	0.10
03/31/2018	0.00	0.00	0.00	0.00	1.42	0.08
06/30/2018	0.00	0.00	0.00	0.00	1.46	0.10
09/30/2018	0.00	0.00	0.00	0.00	2.16	0.10
12/31/2018	0.00	0.00	0.00	0.00	1.23	0.07
03/31/2019	0.00	0.00	0.00	0.00	0.98	0.06
06/30/2019	0.00	0.00	20.50	2.00	0.76	0.07
9/30/2019	0.00	0.00	0.00	0.00	4.82	0.33

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 001 Quarterly Effluent Monitoring (continued)				
Parameter	Total Nitrogen	Total Nitrogen	Total Phosphorus	Total Phosphorus
Units	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report
Minimum	0.00	0.00	0.00	0.00
Maximum	16.48	1.03	14.11	0.78
Average	6.41	0.39	1.20	0.051
Monitoring Period End Date				
09/30/2014	14.41	0.80	1.05	0.050
12/31/2014	9.76	0.60	1.26	0.060
03/31/2015	0.00	0.00	0.00	0.000
06/30/2015	0.00	0.00	0.42	0.020
09/30/2015	16.48	0.90	0.63	0.030
12/31/2015	10.71	0.60	0.42	0.020
03/31/2016	0.00	0.00	0.21	0.010
06/30/2016	0.00	0.00	0.18	0.010
09/30/2016	7.46	0.60	0.37	0.030
12/31/2016	11.80	0.70	0.51	0.030
03/31/2017	6.76	0.50	0.27	0.020
06/30/2017	7.40	0.50	0.59	0.040
09/30/2017	13.34	0.80	1.50	0.090
12/31/2017	11.30	0.60	0.94	0.050
03/31/2018	10.22	0.54	0.30	0.016
06/30/2018	0.00	0.00	0.40	0.027
09/30/2018	0.00	0.00	0.91	0.042
12/31/2018	0.00	0.00	14.11	0.78
03/31/2019	0.00	0.00	0.21	0.013
06/30/2019	0.00	0.00	0.23	0.022
9/30/2019	14.96	1.03	0.58	0.040

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 002 Monthly Effluent Monitoring						
Parameter	**Flow rate**	**Fish on Hand**	**Fish Food Fed**	**Temperature**	**pH**	**pH**
Units	**MGD**	**lb/d**	**lb/d**	**mg/L**	**S.U.**	**S.U.**
	Mo Avg	**Mo Avg**	**Mo Avg**	**Daily Max**	**Minimum**	**Maximum**
Effluent Limitation	Report	Report	Report	Report	6.5	8.0
Minimum	3.1	387.2	66.3	33.8	4.7	5.2
Maximum	6.0	4047.4	578.8	67.8	6.8	7.3
Average	4.2	1960	268	49.4	6.0	6.6
No. of Violations	N/A	N/A	N/A	N/A	56	0
Monitoring Period End Date						
09/30/2014	4.48	1981.6	578.8	57.7	6.2	6.9
10/31/2014	4.42	2452.7	525.0	62.1	6.1	6.4
11/30/2014	4.6	2863.5	460.1	50.2	6.1	6.4
12/31/2014	4.78	3315.7	282.5	43.2	6.1	6.8
01/31/2015	4.68	3477.5	215.6	36.9	6.3	6.5
02/28/2015	4.33	4047.4	196.5	36.3	6.2	6.5
03/31/2015	4.52	3831.1	214.8	37.6	6.0	6.3
04/30/2015	3.6	2932.9	208.9	45.5	5.9	6.4
05/31/2015	3.583	743.0	66.3	47.7	6.0	6.4
06/30/2015	3.1	387.2	150.9	64.4	6.3	6.5
07/31/2015	3.571	774.8	247.8	60.1	6.1	6.4
08/31/2015	4.97	1386.7	370.0	61.5	6.2	6.5
09/30/2015	4.84	1992.6	482.6	56.7	6.2	7.2
10/31/2015	4.53	2169.5	428.0	53.6	5.5	6.5

11/30/2015	4.317	2815.2	387.4	50.7	6.5	6.6
12/31/2015	4.37	2850.3	294.7	44.1	6.0	6.5
01/31/2016	4.196	3140.7	221.0	44.4	5.5	6.4
02/29/2016	3.457	3617.0	161.2	40.5	5.5	6.5
03/31/2016	3.61	2745.1	186.1	40.5	5.7	6.3
04/30/2016	6	1230.0	186.8	45.7	5.8	6.4
05/31/2016	5.99	561.9	94.2	47.1	6.1	6.3
06/30/2016	5.99	406.0	119.3	52.7	5.9	7.1
07/31/2016	3.144	863.0	252.0	53.6	5.6	6.7
08/31/2016	3.912	1353.4	400.0	59.7	5.4	6.1
09/30/2016	4.99	3316.0	459.0	54.0	5.4	6.2
10/31/2016	5.99	2304.0	567.8	55.6	5.3	5.8
11/30/2016	3.656	3014.3	495.0	53.0	5.4	5.9
12/31/2016	3.588	3209.0	289.9	45.0	5.2	5.6
01/31/2017	4.16	3374.0	181.7	40.5	5.4	5.6
02/28/2017	4.17	3807.6	183.4	40.3	5.0	5.2
03/31/2017	4.34	3492.0	213.0	40.5	4.7	6.6
04/30/2017	3.995	2678.0	258.1	47.7	5.2	5.9
05/31/2017	3.88	1221.0	258.4	59.0	5.4	6.2
06/30/2017	3.67	492.2	151.3	56.1	5.9	6.6
07/31/2017	3.417	466.3	111.1	57.7	5.3	5.9
08/31/2017	4.72	836.3	243.0	67.8	6.8	7.0
09/30/2017	4.596	1514.1	439.4	65.7	6.5	6.7
10/31/2017	4.41	1787.0	446.5	53.0	6.2	6.8
11/30/2017	3.89	2393.9	384.1	51.8	6.4	6.8
12/31/2017	4.07	2461.8	218.6	39.2	6.6	6.7
01/31/2018	3.88	2599.7	155.8	37.6	6.3	6.9

02/28/2018	3.75	3057.8	173.3	40.8	6.2	6.8
03/31/2018	3.85	2654.0	176.0	43.5	6.1	6.2
04/30/2018	3.92	1779.8	163.4	41.2	6.1	6.2
05/31/2018	3.22	507.0	304.6	48.7	6.6	7.3
06/30/2018	3.6	409.2	137.8	49.7	6.0	7.0
07/31/2018	4.12	571.1	197.8	61.0	6.1	6.8
08/31/2018	4.986	962.2	298.1	64.4	6.2	6.7
09/30/2018	3.73	1577.5	438.9	59.9	6.5	7.0
10/31/2018	3.43	1645.0	371.7	52.0	6.4	6.6
11/30/2018	4.24	1829.9	248.5	41.9	6.3	6.9
12/31/2018	4.48	1914.0	149.0	38.8	6.0	6.6
01/31/2019	4.52	1984.8	98.9	33.8	6.0	7.1
02/28/2019	4.45	2249.6	121.4	35.6	6.1	6.8
03/31/2019	4.48	2381.3	176.3	35.2	6.1	6.8
04/30/2019	4.41	1942.3	236.5	46.0	5.6	6.8
05/31/2019	4.208	1028.0	242.3	47.1	6.3	6.8
06/30/2019	4.02	541.3	185.0	50.4	6.2	7.0
07/31/2019	3.92	475.0	181.4	54.3	6.4	7.0
8/31/2019	4.49	679.0	257.1	58.6	6.3	6.9
9/30/2019	4.05	1064.5	274.1	56.8	6.5	6.8
10/31/19	3.5	1418.5	347.4	54.9	6.5	6.8
11/30/19	4.3	1981	293	43.5	6.6	7.0

Notes: 0 = parameter not detected; NA = not applicable

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 002
Monthly Effluent Monitoring (continued)

Parameter	Dissolved Oxygen	Dissolved Oxygen	TRC	TRC	Formaldehyde	Formaldehyde	Hydrogen Peroxide
Units	**Mg/L**	**% Saturation**	**lb/d**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
	Daily Max	**Daily Max**	**Daily Max**	**Daily Max**	**Mo Avg**	**Daily Max**	**Daily Max**
Effluent Limitation	Report	Report	0.011	0.019	1.6	4.6	0.7
Minimum	6.5	64.9	---	---	0.00	0.00	0.00
Maximum	15.4	116.9	---	---	1.52	0.16	0.00
Average	10.0	87.4	---	---	0.43	0.06	0.00
No. of Violations	N/A	N/A	0	0	0	1	0
Monitoring Period End Date							
09/30/2014	8.0	77.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2014	7.9	80.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2014	9.1	80.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2014	11.5	91.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2015	11.7	86.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2015	12.2	89.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2015	11.4	84.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2015	10.9	91.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2015	9.8	85.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2015	8.2	87.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2015	8.7	87.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2015	8.4	86.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2015	8.7	85.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9

10/31/2015	8.7	81.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2015	8.8	78.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2015	9.9	82.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2016	10.6	85.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/29/2016	11.2	87.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2016	11.2	87.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2016	9.4	78.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2016	9.4	79.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2016	8.5	85.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2016	9.7	98.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2016	6.5	64.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2016	8.0	75.4	NODI: 9	NODI: 9	1.52	*	NODI: 9
10/31/2016	7.3	70.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	0.0
11/30/2016	8.6	79.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	0.0
12/31/2016	8.5	78.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2017	10.2	87.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2017	11.6	87.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2017	10.9	83.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2017	10.0	85.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2017	7.2	71.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2017	10.0	96.7	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2017	10.2	97.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2017	8.3	90.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2017	8.4	91.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2017	8.6	78.0	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2017	9.1	81.6	NODI: 9	NODI: 9	0.0	0.0	NODI: 9
12/31/2017	12.3	85.6	NODI: 9	NODI: 9	0.028	0.028	NODI: 9

01/31/2018	15.4	116.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2018	10.8	85.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
03/31/2018	10.0	80.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2018	9.9	82.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2018	9.9	82.3	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2018	9.8	92.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2018	8.9	85.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
08/31/2018	8.4	89.9	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
09/30/2018	8.1	81.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/2018	8.5	77.2	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/2018	11.2	89.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
12/31/2018	13.3	101.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
01/31/2019	14.5	100.5	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
02/28/2019	14.0	100.5	NODI: 9	NODI: 9	0.16	0.16	NODI: 9
03/31/2019	14.0	101.1	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
04/30/2019	11.2	94.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
05/31/2019	11.1	94.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
06/30/2019	11.3	100.4	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
07/31/2019	10.4	96.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
8/31/2019	10.1	99.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
9/30/2019	10.3	99.6	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
10/31/19	10.1	93.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
11/30/19	11.8	95.8	NODI: 9	NODI: 9	NODI: 9	NODI: 9	NODI: 9
* DMR reported value not representative of effluent; pending NetDMR correction will report appropriate NODI code.							

Powder Mill Fish Hatchery NH0000710
Outfall Serial Number 002
Quarterly Effluent Monitoring

Parameter	BOD	BOD	TSS	TSS	Total Ammonia	Total Ammonia
Units	lb/d	mg/L	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report	Report	Report
Minimum	0.00	0.00	0.00	0.00	2.84	0.08
Maximum	133.77	4.30	120.00	4.00	14.93	0.39
Average	12.4	0.40	30.8	1.1	6.9	0.20
Monitoring Period End Date						
09/30/2014	63.05	3.00	0.00	0.00	14.57	0.39
12/31/2014	63.05	3.00	0.00	0.00	4.83	0.23
03/31/2015	0.00	0.00	75.39	2.00	9.80	0.26
06/30/2015	0.00	0.00	0.00	0.00	2.84	0.11
09/30/2015	0.00	0.00	0.00	0.00	14.93	0.36
12/31/2015	0.00	0.00	0.00	0.00	9.48	0.26
03/31/2016	0.00	0.00	0.00	0.00	5.72	0.19
06/30/2016	0.00	0.00	100.00	2.00	4.00	0.08
09/30/2016	0.00	0.00	90.24	2.00	8.57	0.19
12/31/2016	0.00	0.00	0.00	0.00	6.58	0.22
03/31/2017	0.00	0.00	72.39	2.00	5.06	0.14
06/30/2017	0.00	0.00	91.82	3.00	3.06	0.10
09/30/2017	0.00	0.00	76.66	2.00	10.73	0.28
12/31/2017	0.00	0.00	69.72	2.00	5.58	0.16
03/31/2018	0.00	0.00	0.00	0.00	4.17	0.13
06/30/2018	0.00	0.00	120.00	4.00	3.60	0.12
09/30/2018	133.77	4.30	0.00	0.00	9.64	0.31
12/31/2018	0.00	0.00	0.00	0.00	5.97	0.16
03/31/2019	0.00	0.00	0.00	0.00	4.10	0.11
06/30/2019	0.00	0.00	67.05	2.00	4.69	0.14
9/30/2019	0.00	0.00	0.00	0.00	6.76	0.20

Powder Mill Fish Hatchery NH0000710 Outfall Serial Number 002 Quarterly Effluent Monitoring (continued)				
Parameter	Total Nitrogen	Total Nitrogen	Total Phosphorus	Total Phosphorus
Units	lb/d	mg/L	lb/d	mg/L
	Daily Max	Daily Max	Daily Max	Daily Max
Effluent Limitation	Report	Report	Report	Report
Minimum	0.00	0.00	0.84	0.02
Maximum	88.16	2.30	3.13	0.09
Average	24.9	0.73	1.56	0.05
Monitoring Period End Date				
09/30/2014	41.10	1.10	1.89	0.090
12/31/2014	31.89	0.80	1.26	0.060
03/31/2015	0.00	0.00	0.84	0.040
06/30/2015	15.51	0.60	0.84	0.040
09/30/2015	33.19	0.80	1.68	0.080
12/31/2015	36.45	1.00	1.05	0.050
03/31/2016	30.11	1.00	0.84	0.040
06/30/2016	0.00	0.00	1.50	0.030
09/30/2016	76.70	1.70	2.26	0.050
12/31/2016	26.90	0.90	1.79	0.060
03/31/2017	21.72	0.60	1.81	0.050
06/30/2017	0.00	0.00	1.84	0.060
09/30/2017	88.16	2.30	2.68	0.070
12/31/2017	24.40	0.70	3.13	0.090
03/31/2018	28.26	0.88	1.12	0.035
06/30/2018	0.00	0.00	1.29	0.043
09/30/2018	40.44	1.30	2.12	0.068
12/31/2018	0.00	0.00	1.46	0.039
03/31/2019	0.00	0.00	0.86	0.023
06/30/2019	0.00	0.00	1.24	0.037
9/30/2019	0.00	0.00	1.32	0.039

Powder Mill Fish Hatchery NH0000710
Weekly pH Effluent and Intake
Monitoring Period November 2018 – October 2019

Monitoring Location	Outfall 001	001 Intake	Outfall 002	002 Intake
Parameter	pH	pH	pH	pH
Units				
Monitoring Period End Date				
11/7/2018	6.52	6.61	6.91	6.26
11/16/2018	6.52	6.61	6.91	6.26
11/21/2018	6.28	6.62	6.63	6.73
11/28/2018	6.51	6.42	6.30	6.62
12/5/2018	6.18	6.29	6.48	6.96
12/12/2018	6.58	6.57	6.60	7.01
12/19/2018	6.52	6.53	6.4	6.46
12/26/2018	6.76	6.71	5.97	6.4
1/3/2019	6.65	6.6	7.05	6.54
1/9/2019	6.81	6.93	5.98	6.48
1/17/2019	6.62	7.18	**6.35**	**7.04**
1/23/2019	6.74	7.02	6.35	6.61
1/31/2019	6.89	7.01	6.52	7.09
2/9/2019	6.94	6.86	6.23	6.52
2/12/2019	6.59	6.93	**6.08**	**6.81**
2/20/2019	6.44	6.4	6.07	6.17
2/27/2019	6.18	6.62	6.78	6.97
3/6/2019	**6.03**	**6.58**	6.37	6.49
3/13/2019	6.01	6.47	6.05	6.45
3/20/2019	6.28	6.14	**6.22**	**6.83**
3/27/2019	6.06	6.17	6.81	6.85
4/3/2019	6.52	6.56	5.62	5.4
4/10/2019	**6.01**	**6.77**	6.76	6.7
4/18/2019	6.66	6.67	6.1	6.4
4/25/2019	6.05	6.07	6.37	6.64
5/2/2019	6.36	6.22	6.75	6.18
5/9/2019	5.80	5.79	6.80	6.85
5/15/2019	6.03	6.08	6.45	6.53
5/22/2019	6.32	6.37	6.74	6.77
5/29/2019	6.81	6.59	6.27	6.05
6/5/2019	6.44	6.47	6.39	6.59
6/12/2019	6.96	6.93	**6.21**	**6.86**

6/19/2019	6.64	6.79	6.54	6.46
6/26/2019	6.18	6.16	7.04	7.03
7/3/2019	6.28	6.31	7.04	6.61
7/10/2019	6.18	6.22	6.38	6.09
7/18/2019	5.96	6.15	6.84	6.13
7/25/2019	6.01	6.1	6.79	6.19
7/31/2019	5.98	6.23	6.71	6.39
8/8/2019	6.17	6.27	6.26	6.19
8/14/2019	6.25	6.27	6.32	6.2
8/21/2019	**5.90**	**6.9**	6.90	6.34
8/28/2019	6.56	6.72	6.81	6.4
9/4/2019	6.24	6.64	6.56	6.67
9/11/2019	6.46	6.55	6.80	6.77
9/18/2019	6.52	6.62	6.53	6.65
9/25/2019	6.57	6.38	6.59	6.74
10/2/2019	6.52	6.77	6.54	6.7
10/10/2019	6.55	6.6	6.51	6.5
10/16/2019	6.58	6.82	6.75	6.71
10/23/2019	6.5	6.88	6.74	6.87
10/31/2019	6.45	6.89	6.69	6.91

Appendix B: Additional Total Phosphorus Effluent Data

Powder Mill Fish Hatchery NH0000710
Response to 308 Information Request
Monthly Total Phosphorus Sampling
Monitoring Period December 2016 – November 2017

		001	001	002	002	Sampled during cleaning?
		Flow	Total P	Flow	Total P	
Date Start	Date End	MGD	mg/L	MGD	mg/L	
12/5/2016	12/6/2016	2.028	0.03	3.588	0.06	Yes
12/19/2016	12/20/2016	2.028	0.03	3.588	0.05	No
1/9/2017	1/10/2017	2.028	0.02	3.77	0.05	No
1/23/2017	1/24/2017	2.028	0.02	3.82	0.05	Yes
2/8/2017	2/9/2017	1.65	0.02	4.05	0.05	No
2/21/2017	2/22/2017	1.57	0.02	4.34	0.03	Yes
3/8/2017	3/9/2017	1.66	0.02	4.18	0.04	Yes
3/20/2017	3/21/2017	1.66	0.02	4.11	0.04	Yes
4/5/2017	4/6/2017	1.66	0.02	4.25	0.06	Yes
4/19/2017	4/20/2017	1.84	0.02	3.92	0.04	No
5/17/2017	5/18/2017	1.93	0.03	3.78	0.05	Yes
6/14/2017	6/15/2017	1.175	0.04	3.67	0.05	Yes
7/12/2017	7/13/2017	1.42	0.09	2.85	0.03	No
8/9/2017	8/10/2017	1.93	0.06	4.72	0.04	No
8/31/2017	9/1/2017	1.84	NS	4.55	0.05	No
9/6/2017	9/7/2017	1.75	0.08	4.55	0.04	Yes
9/20/2017	9/21/2017	1.93	0.05	4.67	0.07	Yes
10/11/2017	10/12/2017	2.4	0.03	4.47	0.09	Yes
10/25/2017	10/26/2017	2.32	0.05	4.42	0.07	No
11/8/2017	11/9/2017	2.32	0.04	4.44	0.07	No
11/29/2017	11/30/2017	2.41	0.03	3.8	0.06	Yes

NS = Not Sampled

Appendix C: Ambient Data

Marsh Pond Ambient Data **Merrymeeting Lake and River: Lake Loading Response Model**			
DATE	DEPTH ZONE	TP (µg/L)	CHL-A (µg/L)
9/4/2016	Surface Grab	35.5	7.06
11/5/2016	Surface Grab	35.5	
5/7/2017	Surface Grab	18.7	
6/4/2017	Surface Grab	19.1	
7/7/2017	Surface Grab	27.1	9.31
7/21/2017	Epilimnion	48.3	7.79
8/4/2017	Surface Grab	37.9	
8/18/2017	Epilimnion	40.5	7.26
9/2/2017	Epilimnion	65.1	30.49
9/3/2017	Surface Grab	50.1	
10/14/2017	Surface Grab	32.3	
10/22/2017	Surface Grab	26.9	
11/3/2017	Surface Grab	22.7	
11/12/2017	Surface Grab	19.4	
4/9/2018	Epilimnion	14.2	2.05
4/9/2018	Surface Grab	18.5	
5/3/2018	Surface Grab	17.5	
6/7/2018	Epilimnion	30.7	5.48
6/7/2018	Surface Grab	26.7	
7/5/2018	Epilimnion	46.8	8.58
7/5/2018	Surface Grab	43.2	
8/9/2018	Epilimnion	35.1	3.96
9/6/2018	Epilimnion	43.1	18.81
10/4/2018	Epilimnion	23.4	1.58
11/6/2018	Epilimnion	14.9	2.11

Appendix D: Merrymeeting River and Lake - Lake Loading Response Model and Phosphorus Limit

A NPDES permit must include any water quality-based limitations necessary to ensure compliance with water quality standards of the state, including narrative criteria, where the pollutant discharge is to occur. 33 U.S.C. Parts 1311(a), 1342 and 40 C.F.R. §§ 122.4(d), 122.44(d)(1)(i) & 122.44(d)(1)(vi). New Hampshire has established a series of use-specific assessment criteria to identify and list waters for impairment of designated uses under Sections 305(b) and 303(d) of the CWA. The Merrymeeting River is not listed as impaired in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List"). Downstream of the Hatchery, however, Jones Pond and Downing Pond are listed in the final *New Hampshire Year 2016 Surface Water Quality List* ("303(d) List") as a Category 5 "Waters Requiring a TMDL" for the Primary Contact Recreation designated use.[19] The Primary Contact Recreation designated use is also listed as impaired for Marsh Pond in the Draft 2018 303(d) List.

While the Merrymeeting River, Marsh Pond, and the two impoundments downstream from the Hatchery are likely to be impacted by nutrients, the specific listed impairment is cyanobacteria (an indicator pollutant for primary contact recreation). The New Hampshire Department of Environmental Services (NHDES) interim nutrient threshold for primary contact recreation in NH lakes is 15 µg/L chlorophyll-a.[20] Lakes are also listed as impaired for primary contact recreation if surface blooms of cyanobacteria are present. NHDES documented surface blooms of cyanobacteria in Jones Pond and Downing Pond in 2016, which led to these waterbodies being listed as impaired for primary contact recreation. Elevated concentration of chlorophyll-a, excessive algal and macrophyte growth, and low levels of dissolved oxygen are all effects of nutrient enrichment. The relationship between these factors and high in-stream total phosphorus concentrations is well documented in scientific literature, including guidance developed by EPA to address nutrient over-enrichment (Nutrient Criteria Technical Guidance Manual – Rivers and Streams, EPA July 2000 [EPA-822-B-00-002]). Presence of cyanobacteria is an indicator of eutrophication, but excessive nutrients are likely to be the primary cause. Phosphorus is the limiting nutrient for plant growth in freshwater lakes and rivers. Therefore, establishing a numeric limit for total phosphrous (TP) that is protective of designated uses can be used as an indicator pollutant for impairments related to the presence of cyanobacteria.

The Draft Permit TP limits are also established to meet narrative water quality standards. New Hampshire's surface water quality standards require that Class B waters, such as the Merrymeeting River, shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring, and existing discharges containing phosphorus or nitrogen, or both, which encourage cultural eutrophication shall be treated to remove the nutrient(s) to ensure attainment and maintenance of water quality standards. Env-Wq 1703.01(b) & (c). In addition, surface waters must be free of substances which float as foam, debris, or scum; produce odor, taste, or turbidity making the water

[19] *New Hampshire 2016 Section 303(d) List of Threatened or Impaired Waters that Require a TMDL*. New Hampshire Department of Environmental Services, Concord, NH; November 2017.
[20] State of New Hampshire 2016 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/documents/r-wd-17-08.pdf

unsuitable for the designated use; result in nuisance species; or interfere with recreational activities (Env-Wq 1703.03). EPA is deriving a numeric phosphorus limit as an indicator parameter for cyanobacteria (and chlorophyll-a) in order to address the impairment for primary contact recreation designated use and to meet the narrative water quality standards at Env-Wq 1703.03 and 1703.14.

1.0 Background

NHDES uses an in-lake TP target of 12 µg/L for lakes unless the predicted concentration under natural (pre-development) conditions is greater. The value of 12 µg/L is derived from an analysis of the observed TP concentrations from a set of impaired and unimpaired lakes in New Hampshire and determined to be the threshold that will support recreational and aquatic life designed uses as reflected in chlorophyll-a levels and secchi disk transparency. For more information on the derivation of the target in-lake concentration see Appendix A of the Phillips Pond TMDL.

NHDES uses the Lake Loading Response Model (LLRM) to evaluate watershed loading and determine maximum loading allowed that will still achieve water quality standards for phosphorus (TP), chlorophyll-a (Chl), and Secchi disk transparency (SDT) in New Hampshire lakes. The LLRM is a spreadsheet-based model that uses three types of inputs: hydrology, nutrient yield based on land use in the watershed, and nutrient inputs from atmospheric deposition, internal loading, waterfowl and other wildlife, septic systems, and point sources (like the Powder Mill Fish Hatchery). The LLRM uses this information to make calculations about flow through the watershed and TP loading to the lake. The LLRM then uses these calculations to predict average in-lake TP, and from the predicted TP value, calculates values for Chl, SDT, and algal bloom probability. A detailed description of the LLRM is included as Appendix B to NHDES Lake Phosphorus TMDLs, including the recently approved TMDL for Phillips Pond.

In 2019, the Merrymeeting Cyanobacteria Steering Committee (MCSC) developed the Merrymeeting River and Lake Watershed Management Plan (2019 WMP) to assess water quality throughout the watershed, plan for improvements to reduce point and non-point sources of phosphorus, and as a possible mechanism for securing funding for actions necessary to achieve water quality goals (e.g., EPA Section 319 grants). As part of this effort, the MCSC and its consultant developed an LLRM for the Merrymeeting River and Lake Watershed. See 2019 Merrymeeting River and Lake Watershed Lake Loading Response Model Report. The Merrymeeting LLRM divides the watershed into 5 sub-basins: Merrymeeting Lake, Marsh Pond, Jones Pond, Downing Pond, and Coffin Brook-MMR in Alton. Land cover was obtained from the NH Land Cover Assessment using ESRI Work Imagery and updated by the consultant. The 2019 LLRM Report includes a detailed assessment of land cover maps (e.g., Figure 4 at 4). The output from each sub-basin is the upstream point source input for the downstream basin. The model uses data inputs from National Oceanographic and Atmospheric Administration National Centers for Environmental Information (precipitation data), New Hampshire Fish and Game Department (NHFGD) and NHDES (lake volume and area estimates), state and local records (septic data), and volunteers (waterfowl counts). Water quality data, including TP, Chl-a, and SDT, were obtained from the NHDES Environmental Monitoring Database and from the University of New Hampshire Cooperative Extension Lakes Monitoring Program.

The MCSC shared the Excel files with EPA (and NHDES) to assist in development of a phosphorus limit for the Powder Mill Fish Hatchery. EPA used the LLRM to manipulate the phosphorus concentration or load from the two hatchery outfalls in order to achieve a target in-lake phosphorus concentration that will protect the designated uses in the receiving water. No other inputs or flows to the LLRM were changed. EPA used the LLRM to evaluate the impact of reductions from the hatchery on the indicator variable (TP) and response variable (Chl-a). EPA used the LLRM to establish a water quality-based effluent limit for an indicator pollutant, TP, at the two hatchery outfalls at levels that are predicted to achieve narrative water quality standards and meet the primary contact recreation designated use in Marsh Pond. EPA focused on the hatchery TP load and in-lake TP concentration in Marsh Pond, which is the first lake downstream of the hatchery. Because most of the loading to Jones and Downing Ponds originates in Marsh Pond, EPA expects, and the LLRM predicts, that the water quality improvements in Marsh Pond will result in similar improvements in Jones and Downing Ponds. EPA's use of the LLRM to establish limits in the Draft Permit is not a TMDL for the watershed. Rather, EPA used the LLRM as significant, relevant information for translating the State's narrative WQS into a numeric limit. *See* 40 C.F.R. § 122.44(d)(1)(vi).

2.0 Current Conditions

The primary sources of water to the Merrymeeting River and Lake Watershed include atmospheric (direct) precipitation, runoff (overland flow to tributaries and direct drainage to the lake), and baseflow (precipitation that infiltrates and is released to the surface water via tributaries or directly to the lake). The Marsh Pond sub-basin includes direct drainage to the pond, flow from Merrymeeting Lake and the Hatchery, and flows from: Bear Pond, Bear Pond Brook, Brackett Road culvert, Rattlesnake Mountain Brook, and the North, South, and West tributaries. The Hatchery withdraws water from the Merrymeeting Lake year-round to supply water for rearing fish. According to the 2019 LLRM Report, about 42% of the total annual water budget from the Merrymeeting Lake to Marsh Pond is routed through the Hatchery's outfalls. Additional water from the lake enters the Merrymeeting River by overtopping the dam. In early spring and fall, NHFGD adjusts the lake level and flow over the dam is high. In summer, nearly all of the flow from the lake is through the hatchery. *See* 2019 LLRM Report Figure 8 (at 8). The annual water budget for the LLRM is provided in Table D-1, below.

Table D-1. Annual water budget to Marsh Pond based on the Merrymeeting River and Lake LLRM.

Water Budget	**m^3/year**
Atmospheric	135,221
Septic	3,623
Watershed Runoff	3,190,747
Watershed Baseflow + Runoff	28,169,699
Hatchery	*8,462,614*
Total	**28,308,544**

Each of these sources carries a phosphorus load. The TP loads from each source into Marsh Pond was calculated using export coefficients for each land use type and the point source load from the

two hatchery outfalls. The export coefficients used for calculating the TP load from baseflow and runoff are presented in Attachment 3 to the 2019 LLRM Report. The watershed load (baseflow and runoff) was combined with direct loads from atmospheric, internal, septic, and waterfowl sources to calculate the cumulative TP load to Marsh Pond. The current phosphorus loading summary based on existing conditions in the LLRM is provided in Table D-2. Based on the model, the Hatchery outflow via Outfall 001 and Outfall 002 adds 378 kilograms (kg) (833 pounds (lbs)) per year to the system, which comprises more than 70% of the TP load to Marsh Pond, including basin attenuation.

Table D-2. Total phosphorus load to Marsh Pond based on the Merrymeeting River and Lake LLRM.

TP Inputs	Modeled TP Load (kg/year)	% of Total Load
Atmospheric	2.0	0.4
Internal Load	6.4	1.2
Waterfowl	6.1	1.2
Septic Systems	4.9	0.9
Watershed Load (Baseflow + Runoff)	493.3*	96.2
Total	**512.7**	**100**

* The portion of the watershed load from the Hatchery outfalls is 378 kg/year.

Overall, the 2019 LLRM Report indicates that the model's predictions agree with observed data. The LLRM Report lists several limitations to the model, including 1) that the high flushing rate in Marsh Pond and the downstream impoundments resemble a riverine environment and that because of these conditions, the empirical formulas used to predict in-lake concentrations are near their practical limit; and 2) the water quality data used in the LLRM were limited to the growing season (April – November) and data were flow-weighted to estimate an annual summer statistic. *See* 2019 LLRM Report at 11-12.

According to the LLRM, watershed runoff and baseflow are the largest loading contribution across all sources, followed by atmospheric deposition, septic systems, waterfowl, and internal loading. The two hatchery outfalls contribute the largest TP load to Marsh Pond. Waterbodies downstream of Merrymeeting Lake are dominated by the upstream load, including the point source load from hatchery. The 2019 LLRM Report also indicates that internal loading is a concern in Marsh and Jones Pond. *See* 2019 LLRM Report Figure 9 at 9. As the point source load from the hatchery is reduced to comply with effluent limitations in the Draft Permit, the internal phosphorus load to Marsh and Jones Ponds will become more significant and may require additional action.

The TP load in Marsh Pond, based on the sources described above, including the baseflow phosphorus load and the load from the hatchery point sources, were used to predict in-lake concentrations using empirical models which estimate TP from features of the lake (e.g, depth and flushing rate). The models include: Kirchner-Dillon (1975), Vollenweider (1975), Larsen-Mercier (1976), and Nurnberg (1998). The LLRM calculates the predicted in-lake TP concentration based on the average of the empirical models and compares the prediction to the

median, observed year-round TP value. See Table D-3, below. The LLRM also calculates in-lake TP concentration based on a mass-balance approach. More information about the models is found in the NHDES Phillips Pond TMDL.

Table D-3. Estimated total phosphorus concentration in Marsh Pond based on the Merrymeeting River and Lake LLRM under current conditions.

Model	Equation	Predicted TP (µg/L)
Mass Balance	$TP = L/(Z(F))*1000$	18
Kirchner-Dillon*	$TP = L(1-R_p)/(Z(F))*1000$	17
Vollenweider*	$TP = L/(Z(S+F))*1000$	18
Larsen-Mercier*	$TP = L(1-R_{lm})/(Z(F))*1000$	16
Nurnberg*	$TP = L/(Z(F))(1-(15/(18+Z(F))))*1000$	17
Jones-Bachmann	$TP = (0.84L)/(Z(0.65+F))*1000$	15
Reckow General	$TP = L/(11.6 +1.2(Z(F)))*1000$	14
Average of 4 Models		**16.9**
Observed median value		**17.7**

*Predicted value included in calculation of average TP based on empirical models.
L = Phosphorus load to lake
Z = Mean depth
F = Flushing rate
S = Suspended fraction
R_p = Retention coefficient (settling rate)
R_{lm} = Retention coefficient (flushing rate)

The empirical models predict annual TP concentrations ranging from 14 to 18 µg/L with an average in-lake concentration of 16.9 µg/L. The median, flow-weighted TP concentration from observed in-lake data from 2017 through 2018 is 17.7 µg/L. The predicted and observed ambient TP concentration in Marsh Pond is greater than the NHDES in-lake TP target concentration of 12 µg/L. The current Marsh Pond TP levels are contributing to algal blooms, including cyanobacteria. The presence of cyanobacteria is the source of the impairment to the primary contract recreation designated uses in Marsh, Jones, and Downing Ponds.

The Jones-Bachman (1976) and Reckhow General (1977) models were excluded from the calculation of the average in-lake TP concentration because, according to the 2019 LLRM Report, these empirical models consistently underpredict the observed value. The LLRM empirical models are close to the predicted value based on a simple mass balance model, which considers only the lake depth and flushing rate. This is because the high flushing rate in Marsh Pond reduces the importance of the TP retention rate and the suspended fraction on the TP concentration, which is accounted for in the empirical models.

TP estimates from the empirical models are used to predict annual mean chlorophyll-a (Chl-a) and secchi disk transparency (SDT) using another set of empirical equations. The predicted frequency of algal blooms is calculated based on equations developed by Walker (1984, 2000) using a natural log mean Chl-a standard deviation of 0.5. These values are presented in Table D-4, below.

Table D-4. Predicted in-lake chlorophyll-a, secchi disk transparency, and bloom probability based on an annual mean in-lake phosphorus concentration of 16.9 µg/L.

Model	Equation	Predicted TP (µg/L)
Mean Chlorophyll-a		
Carson	Chl = 0.87*(Pred TP)^1.45	5.2
Dillon and Rigler	Chl = 10^(1.449*Log(Pred TP)-1.136)	4.4
Jones and Bachmann	Chl = 10^(1.46*Log(Pred TP)-1.09)	5.0
Oglesby and Schaffner	Chl = 0.574*(Pred TP)-2.9	6.8
Modified Vollenweider	Chl = 2*0.28*(Pred TP)^0.96	8.4
NHDES 2009		6.7
Average of Model Values		**6.3**
Observed Annual Mean		4.7
Observed Summer Mean		9.6
Peak Chlorophyll-a		
Modified Vollenweider	Chl = 2*0.64*(Pred TP)^1.05	24.9
Vollenweider (Chl)	Chl = 2.6*(Average(Pred Chl))^1.06	18.3
Modified Jones, Rast, Lee	Chl = 2*1.7*(Average(Pred Chl))+0.2	21.7
Average of Model Values		21.6
Observed Maximum (Surface)		30.5
Bloom Probability		
Probability of Chl>15 µg/L	See Walker 1984 & 2000	2.4%
Secchi Disk Transparency		
Mean: Oglesby and Schaffner	Chl = 10^(1.36-0.764*LOG(Pred TP))	2.6
Max: Modified Vollenweider	Chl = 9.77*Pred TP^-0.28	4.4
Observed Summer Mean		3.1
Observed Summer Max		4.9
"Pred TP" is the average TP calculated from the empirical models in Table 3		
"Pred Chl" is the average Chl from empirical models calculating mean Chl		
Jones-Bachmann Model for Chl was excluded for consistency with TP calculation		

3.0 Effluent Limit

The Merrymeeting River and Lake LLRM predicts annual in-lake TP concentrations based on changes to the current TP inputs into the system. EPA manipulated the TP input from Outfalls 001 and 002 to the Marsh Pond LLRM while keeping all other inputs equal to current conditions to evaluate how reducing the Hatchery load affects in-lake TP concentration. EPA systematically changed the Hatchery TP concentration until a target in-lake predicted TP concentration of 12 µg/L was achieved in Marsh Pond. As explained above, NHDES uses an in-lake TP target of 12 µg/L as the threshold that will support recreational and aquatic life designed uses in mesotrophic lakes. At an effluent phosphorus concentration of 25 µg/L at Outfalls 001 and 002, all of the empirical models predict an in-lake TP concentration of 12 µg/L or less in Marsh Pond. The results of this model run are presented in Table D-5.

Table D-5. Estimated in-lake total phosphorus concentration in Marsh Pond based on the Merrymeeting River and Lake LLRM with a total phosphorus effluent concentration of 25 µg/L at Outfalls 001 and 002.

Model	Predicted TP (µg/L)
Mass Balance	12
Kirchner-Dillon*	12
Vollenweider*	12
Larsen-Mercier*	11
Nurnberg*	10
Jones-Bachmann	10
Reckow General	11

Marsh Pond and the downstream impoundments resemble a riverine system because the flushing rate is relatively high (e.g., Marsh Pond flushes about 54 times per year and the downstream impoundments flush more frequently). For this reason, EPA chose a simple mass balance equation based on load, depth, and flushing rate (see Table D-3) as the most conservative representation of the in-lake TP concentration. At an annual average hatchery concentration of 25 µg/L from each outfall, the mass balance equation predicts an in-lake annual average concentration of 12 µg/L. The corresponding total maximum annual TP load that is expected to result in an in-lake annual mean TP concentration of 12 µg/L is 212 kg (466 lbs) per year. [21] Under current conditions, the load from the hatchery is 378 kg (833 lbs) per year. An annual load limitation of 212 kg/yr reflects a 44% reduction from the existing load from the Hatchery.

The in-lake TP concentration of 12 µg/L is used to predict annual mean chlorophyll-a (Chl-a) and secchi disk transparency (SDT) using another set of empirical equations, as described above. These values are presented in Table D-6, below.

Table D-6. Predicted in-lake chlorophyll-a, secchi disk transparency, and bloom probability based on an effluent concentration of 25 µg/L and annual mean in-lake phosphorus concentration of 12 µg/L.

Model	Predicted Value (µg/L)
Mean Chlorophyll-a	
Carson	3.0
Dillon and Rigler	2.5
Jones and Bachmann	2.8
Oglesby and Schaffner	3.6
Modified Vollenweider	5.8
NHDES 2009	4.7
Average of Model Values	**3.9**

[21] EPA presents the results of a model simulation in which the annual average concentration at each of the two hatchery outfalls was equal to 25 g/L; however, EPA ran additional simulations in which the average annual load or concentration at each of the two outfalls varied with the total load constant at 465 pounds/year and the target annual average in-lake concentration of 25 µg/L achieved.

Peak Chlorophyll-a	
Modified Vollenweider	16.4
Vollenweider (Chl)	11.0
Modified Jones, Rast, Lee	13.5
Average of Model Values	**13.6**
Bloom Probability	
Probability of Chl>15 µg/L	0.2%
Secchi Disk Transparency	
Mean: Oglesby and Schaffner	3.6
Max: Modified Vollenweider	4.9

The LLRM predicts that, with an in-lake TP concentration of 12 µg/L (based on a reduction in the Hatchery effluent to 25 µg/L), the mean chlorophyll-a is expected to decrease from 6.3 to 3.9 µg/L (a 38% reduction) and the peak chlorophyll-a is expected to decrease from 21.6 to 13.6 µg/L (a 37% reduction). The model predicts that with the Hatchery TP reduction, the peak chlorophyll-a concentration is not expected to exceed 15 µg/L and the probability of algal blooms is reduced to 0.2%. EPA expects that the calculated reductions in peak chlorophyll-a and probability of algal blooms will ensure the primary contact recreation designated use is supported in Marsh Pond.

The LLRM predicts that an annual load of 465 lbs/year (212 kg/year), which equates to an annual average effluent concentration of 25 µg/L from the Hatchery's outfalls, will achieve an in-lake TP concentration of 12 µg/L and will support the primary contact recreation designated use in Marsh Pond. The target in-lake concentration is consistent with recently approved NHDES TMDLs for impaired lakes. An implicit margin of safety (MOS) is appropriate when the assumptions used to develop the model (in this case, the LLRM) are sufficiently conservative to account for the MOS. An explicit MOS, on the other hand, allocates a portion of the total target load to the MOS. NHDES explains that using a target in-lake concentration of 12 µg/L in its TMDLs includes an implicit margin of safety. See Phillips Pond TMDL at 5-1 and Appendix A at A-5, A-8. The empirical models used to predict mean annual in-lake phosphorus concentrations assume fully mixed conditions, but the target in-lake concentration is based on summer epilimnetic concentrations. Studies indicate that mean annual concentrations can be 14 to 40% higher than summer epilimnetic concentrations (Nurnberg 1996, 1998).[22] An annual mean concentration of 15 µg/L TP is the threshold value for mesotrophic lakes used the they New Hampshire Lay Lakes Monitoring Program (Craycraft and Schloss 2005).[23] In other words, setting a target at 12 µg/L based on summer epilimnetic values (which are typically lower than the annual mean concentration) provides an implicit margin of safety.

Unlike the lakes in the Nurnberg studies, the Merrymeeting River and Lake Watershed are subject to a constant point source load of phosphorus from the hatchery. At Outfall 002, the peak

[22] Nurnberg, G.K. 1996. Trophic state of clear and colored, soft and hardwater lakes with special consideration of nutrients, anoxia, phytoplantkon, and fish. Journal of Lake and Reservoir Management 12(4): 432-447. Nurnberg, G.K. 1998. Prediction of annual and seasonal phosphorus concentrations in stratified and unstratified lakes. Limnology and Oceanography 43(7): 1544-1552.
[23] Craycraft, R., J. Schloss. 2005. Baboosic Lake Water Quality Monitoring: 2005. Center for Freshwater Biology, University of New Hampshire.

phosphorus concentrations occur in the 3rd calendar quarter. Based on the data used in the LLRM, mean summer epilimnetic and surface grab phosphorus concentrations in Marsh Pond were about 50% higher than the annual mean TP concentration. In addition, Marsh Pond has a relatively high flushing rate, which causes the pond to have characteristics similar to that of a riverine system. For these reasons, the implicit MOS in the LLRM may not be sufficiently conservative and an explicit MOS will provide an additional level of safety to ensure that the effluent limits based on the LLRM will remain protective during the summer growing season when cyanobacteria blooms occur. NHDES provides that typical lake nutrient TMDLs in New Hampshire use a MOS of 10-20%. For the Draft Permit, EPA applied an explicit 15% MOS to the total target load predicted to achieve an in-lake annual phosphorus concentration of 12 µg/L.

As discussed above, the LLRM predicts that an in-lake target of 12 µg/L will be met with an annual TP load of 465 lbs (212 kg) from the hatchery. This target annual load is based on an effluent TP concentration of 25 µg/L and is calculated on an annual average basis. During most months there is likely sufficient flow over the dam (i.e., not routed through the hatchery) and baseflow to Marsh Pond to allow some level of dilution of the hatchery's effluent at this TP concentration such that narrative water quality standards will be achieved. However, during the summer, all of the flow to the Merrymeeting River upstream of Marsh Pond is routed through the hatchery without dilution, and baseflow to Marsh Pond is likely to be low. However, in recent years, the ponds downstream of the hatchery have experienced repetitive cyanobacteria blooms and higher than expected chlorophyll-a concentrations in the summer months. At an effluent TP concentration of 25 g/L during the summer growing season, cyanobacteria blooms could continue to occur, which will interfere with the structure and function of the benthic community and primary contact recreation. In other words, an effluent concentration of 25 may not be low enough to achieve the target in-lake concentrations during a time when algal blooms and chlorophyll-a concentrations could result in impairments to the primary contact recreation designated use. EPA and NHDES determined that an additional MOS is needed to protect Marsh Pond during the summer growing season.

EPA applied a 15% MOS to the target annual load (465 lbs/year) from the LLRM, which results in an annual TP mass-based effluent limit of 395 lbs/year. The Draft Permit includes an annual, mass-based effluent limit of 395 lbs/year that applies to the cumulative load from Outfalls 001 and 002 and requires reporting the individual load at each outfall. The TP hatchery load from October through May based on an effluent TP concentration of 25 µg/L and average flow of 6.1 MGD from the two outfalls combined (i.e., 1.27 lbs/day) is 308 pounds. Subtracting this value from the total annual TP load that achieves a target in-lake phosphorus concentration (minus a 15% MOS) is 87 lbs. Allotting this remaining load of 87 lbs to the months of June through September (122 days) results in a daily load of 0.72 lbs/day from the hatchery. Using the average daily hatchery flow of 6.1 MGD results in a TP concentration from June through September of 14 µg/L. The Draft Permit thus includes a seasonal (June through September) average monthly TP concentration-based limit of 14 µg/L to the each of the two hatchery outfalls and a seasonal, mass-based TP load of 87 lbs for the combined discharge of Outfalls 001 and 002 from June through September. A TP concentration of 14 ug/L is in the range of regional and national evaluations on the typical total phosphorus concentrations for mesotrophic lakes. The average monthly, concentration-based limit is designed to restrict the phosphorus load from the Hatchery on a monthly basis to support designated uses in Marsh Pond.

Finally, the LLRMs for the downstream impoundments indicate that the primary TP input to Jones Pond and Downing Pond is the load from the upstream source. By controlling the TP input from the Hatchery to Marsh Pond, the upstream input is significantly reduced so that conditions necessary to support the primary contact recreation designated uses will be achieved in the downstream impoundments.

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
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U.S. ENVIRONMENTAL PROTECTION AGENCY-REGION 1
WATER DIVISION
5 POST OFFICE SQUARE
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JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT (THE "ACT"), AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE ACT, AND ISSUANCE OF A STATE SURFACE WATER PERMIT UNDER NH RSA 485-A:13, I(a).

PUBLIC NOTICE PERIOD: **December 31, 2019 – February 14, 2020**

PERMIT NUMBER: **NH0000710**

PUBLIC NOTICE NUMBER: **NH-12-19**

NAME AND MAILING ADDRESS OF APPLICANT:

New Hampshire Fish & Game
11 Hazen Drive
Concord, NH 03301

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

RECEIVING WATER: Merrymeeting River (Class B)

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) have cooperated in the development of a draft permit for the Powder Mill State Fish Hatchery, which discharges fish culture water and treated hatchery effluent. The effluent limits and permit conditions imposed have been drafted to assure compliance with the Clean Water Act, 33 U.S.C. sections 1251 et seq., Chapter 485-A of the New Hampshire Statutes: Water Pollution and Waste Disposal, and the New Hampshire Surface Water Quality Regulations, Env-Wq 1700 et seq. EPA has formally requested that the State certify the draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

The draft permit and explanatory fact sheet may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html or by contacting:

Danielle Gaito
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1297
gaito.danielle@epa.gov

The administrative record containing all documents relating to this draft permit including all data submitted by the applicant may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of the draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **February 14, 2020**, to the address or email address listed above. Due to the expected significant public interest, a public hearing will be held to consider this draft permit at least thirty days following public notice. The public hearing will be held in early February at a time and location to be announced. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public.

FINAL PERMIT DECISION:

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

THOMAS E. O'DONOVAN, P.E., DIRECTOR
WATER DIVISION
NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES

KEN MORAFF, DIRECTOR
WATER DIVISION
U.S. ENVIRONMENTAL PROTECTION
AGENCY - REGION I

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

U.S. ENVIRONMENTAL PROTECTION AGENCY-REGION 1
WATER DIVISION
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

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

PUBLIC NOTICE PERIOD: **December 31, 2019 – February 14, 2020**

PERMIT NUMBER: **NH0000710**

PUBLIC NOTICE NUMBER: **NH-12-19**

NAME AND MAILING ADDRESS OF APPLICANT:

New Hampshire Fish & Game
11 Hazen Drive
Concord, NH 03301

NAME AND LOCATION OF FACILITY WHERE DISCHARGE OCCURS:

Powder Mill State Fish Hatchery
288 Merrymeeting Road
New Durham, NH 03855

RECEIVING WATER: Merrymeeting River (Class B)

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) have cooperated in the development of a draft permit for the Powder Mill State Fish Hatchery, which discharges fish culture water and treated hatchery effluent. The effluent limits and permit conditions imposed have been drafted to assure compliance with the Clean Water Act, 33 U.S.C. sections 1251 et seq., Chapter 485-A of the New Hampshire Statutes: Water Pollution and Waste Disposal, and the New Hampshire Surface Water Quality Regulations, Env-Wq 1700 et seq. EPA has formally requested that the State certify the draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified.

INFORMATION ABOUT THE DRAFT PERMIT:

The draft permit and explanatory fact sheet may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_nh.html or by contacting:

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The administrative record containing all documents relating to this draft permit including all data submitted by the applicant may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC HEARING:

The Regional Administrator has determined, pursuant to 40 C.F.R. § 124.12, that there is a significant degree of public interest in this draft permit and a public hearing should be held in New Durham, New Hampshire to consider this permit. Accordingly, a public hearing will be held on the following date and time:

DATE: **Wednesday, February 5, 2020**

(SNOW DATE: Thursday, February 6, 2020)

TIME: **7:00 PM**

LOCATION: **New Durham Elementary School**
7 Old Bay Road
New Durham, NH 03855

The following is a summary of the procedures that will be followed at the public hearing:

- The Presiding Chairperson will have the authority to open and conclude the hearing and to maintain order.
- Any person appearing at such a hearing may submit oral and/or written statements and data concerning the draft permit.

PUBLIC COMMENT:

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 **February 14, 2020**, to the address or email address listed above. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public.

FINAL PERMIT DECISION:

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AGENCY - REGION I