UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA NEW ENGLAND
OFFICE OF ECOSYSTEM PROTECTION
ONE CONGRESS STREET
SUITE 1100 (MAIL CODE: CPE)
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

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

PUBLIC NOTICE START AND END DATES:

PUBLIC NOTICE NUMBER:

CONTENTS: Twenty-six pages including three Attachments A through C.

NPDES PERMIT NO.: NH0000710

NAME AND MAILING ADDRESS OF APPLICANT:

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

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Facility Location

Powder Mill Fish Hatchery
Merrymeeting Road
New Durham, New Hampshire

Mailing Address

New Hampshire Fish and Game Department
Powder Mill Fish Hatchery
c/o Superintendent
288 Merrymeeting Road
New Durham, New Hampshire 03855

RECEIVING WATER: Merrymeeting River (Hydrologic Basin Code: 01070002)
CLASSIFICATION: Class B

Receiving waters designated as Class B in New Hampshire pursuant to RSA 485-A:8 are considered suitable for swimming and other recreational purposes, maintenance of shellfish and other fish life, and for use as a water supply after adequate treatment.

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

The applicant, New Hampshire Fish and Game Department (NHF&GD), has applied to the U.S. Environmental Protection Agency, New England Office (EPA-New England) for reissuance of its NPDES permit for the discharge of culture water from its Powder Mill Fish Hatchery, a concentrated aquatic animal production (CAAP) facility. Presently, this state owned and operated facility is engaged in the rearing of various species of trout (eastern brook, rainbow and brown) hatched from eggs at other NHF&GD hatcheries and transferred as fingerlings (3 inches) to Powder Mill for grow out to stockable size. The majority of these trout are yearling size (8 to 12 inches) with an average age of 15 to 18 months at stocking. Powder Mill does not manage a broodstock population, but does accept excess trout brood fish from the New Hampton hatchery for release during the annual spring stocking and until the winter of 2002-2003 accepted anadromous Atlantic salmon brood fish from the Nashua National Fish Hatchery for winter holdover. However, at this time it is unclear whether winter holdover will be re-instituted for the winter of 2004-2005. Land-locked Atlantic salmon (LLS) are reared from eggs taken from feral brood fish captured in pound nets each year in the fall (primarily from Lake Winnipesaukee, but occasionally from Squam Lake) and transported back to Powder Mill as green eggs for incubation and hatching in the hatchery building followed by grow out to stockable size (8 inches) in the outside rearing units. All fish from this facility are used for fisheries management (stocking) in selected New Hampshire waterbodies.

Discharges from CAAP operations, such as Powder Mill's Fish Hatchery, typically contain organic and inorganic solids, nutrients and also chemicals used in the prevention and treatment of various diseases. Any of these constituents could impair the water quality in the receiving water. Solids in the discharge occur both in the dissolved and particulate form and result from fish feces and uneaten food particles. Nutrients such as phosphorus and nitrogen are associated with these solids. In sufficient concentration, solids and nutrients have the potential to create dissolved-oxygen deficits in the receiving water due to the decay of organic solids, and the presence of nutrients allow for excessive growth of any or all of the three main algae types: phytoplankton (floating freely in water column), periphyton (attached to aquatic vegetation or other structures) and benthic (attached to bottom sediments).

EPA-New England is proposing an NPDES permit for this CAAP production facility. A CAAP production facility is defined in 40 Code of Federal Regulations (CFR) Section 122.24(b) to mean "a hatchery, fish farm, or other facility which meets the criteria in appendix C of this part, or which the Director designates under paragraph (c) of this section." Pertinent regulations in 40 CFR (Parts 122.24, 122.25 and Appendix C of Part 122) that give EPA authority to regulate discharges from fish hatcheries through the NPDES program are shown in **Attachment A**. This facility has been designated a CAAP facility because according to its application dated August 29, 2002, Powder Mill produces more than 20,000 pounds (lbs) of harvestable weight of fish in a given year and uses more than 5,000 lbs of food during the calendar month of maximum feeding. Yearly production targets

by species are: eastern brown trout (EBT) at 41,918 lbs, brown trout (BT) at 7,682 lbs, rainbow trout (RT) at 73,532 lbs and LLS at 5,250 lbs for a total of 128,382 lbs. In any given year, actual production can vary ± 10 percent (%) from this target. For example, in State fiscal year (FY)-2001 (July 1st through June 30th), 110,572 lbs of fish were produced using 146,286 lbs of feed, whereas, in FY 2002, 168,782 lbs of fish were produced using 167,473 lbs of feed. On their application, NHF&GD reported a maximum feeding rate of 25,528 lbs occurred in October.

The Powder Mill Fish Hatchery's existing ("current") permit was issued on August 28, 1974, and expired on August 1, 1979. The applicant has requested renewal of its NPDES permit to discharge effluent (untreated water used in rearing trout and salmon) into the designated receiving water and has submitted the proper application materials. Their current permit has been continued in force (administratively extended) as per 40 CFR Section 122.6 until a new permit can be issued.

The current permit authorizes a year round discharge to the waters of the United States from various outfalls, and that authorization to discharge will be continued with limits, monitoring requirements and Best Management Practices as described in this Fact Sheet and shown in the accompanying Draft Permit. Location of Powder Mill Fish Hatchery, the receiving water (Merrymeeting River) is shown on a copy of a U.S. Geological Survey Topographic map (See **Attachment B**).

II. Description of Facility including Chemical/Drug Usage, Discharge and Current Permit.

The Powder Mill Fish Hatchery is located just below the outlet of Merrymeeting Lake **(Attachment B**). It was originally constructed in 1947 with an additional rearing unit constructed in the 1970's and again in the 1990's. All domestic wastewater discharges to an on-site septic tank leach field system and all floor drains in the various working buildings have been plugged with concrete.

Fish rearing units at this hatchery consist of a Hatchery House, seven Raceways, four Woods Ponds, four Bass Ponds and 27 Circular Tanks (See **Attachment C**) for use in rearing various species of salmon and trout from egg and fingerling size, respectively, to the yearling stage. Culture water from these rearing units discharge on a regular basis through seven outfalls to the Merrymeeting River. The hatchery also maintains three Show Ponds in which a few trout are kept for public viewing and feeding, but in which no fish are raised for stocking purposes. See Table 1 below for further details on which fish species are grown in the various rearing units. Within each raceway, there are a series of sub-raceways, called banks, and within those raceways adjacent to the parking lot, low pressure aeration has been installed to control ice formation and to aerate the water. No other methods of water treatment are used on this hatchery's water supply, such as disinfection, sediment removal, screening, filtration and/or heating/cooling. At any given time, not all the culture units are in use; however, just before the annual stocking in March/April the fish biomass (fish of stockable size) in the rearing units is usually at its yearly maximum.

Water for all culture units is obtained from a single source, Merrymeeting Lake, and water from that source flows freely (by gravity) to all those units **(See Attachment C**) with some of that water being serial reused from one unit to the next. Depending on the fish reared each year, water usage ranges from 3,700 to 4,500 gallons per minute (gpm) or from 5.3 to 6.5 million gallons per day (mgd), respectively. In **Attachment C**, the reader will find a comprehensive water-flow diagram which contains maximum flows to individual rearing units and outfalls, where known.

Table 1. --*Fish Species and Life Stages of Growth by Rearing Unit*

Rearing Unit	**Fish Species Cultured**	**Life Stages of Fish Growth**
Hatchery House	Land-Locked Atlantic Salmon	Eggs to fingerling
Raceway A	Land-Locked Atlantic Salmon	Fingerling to yearling
Raceway B	Eastern Brook Trout	Fingerling to yearling
Raceway C	Rainbow Trout	Fingerling to yearling
Raceway F	Rainbow Trout	Fingerling to yearling
Raceway G	Eastern Brook Trout, Brown Trout Rainbow Trout	Fingerling to yearling
Raceway H	Eastern Brook Trout, Brown Trout Rainbow Trout	Fingerling to yearling
Raceway I	Eastern Brook Trout, Brown Trout Rainbow Trout	Fingerling to yearling
Show Ponds --for (Public Viewing/Feeding)	Eastern Brook Trout, Brown Trout Rainbow Trout	Yearling and older
Old Granite Canal	No fish reared in Canal	Not Applicable
Woods Ponds	Rainbow Trout	Fingerling to yearling
Bass Ponds	Atlantic Salmon (anadromous)	Winter holdover of Atlantic Salmon brood fish
Circular Tanks	Eastern Brook Trout	Fingerling to yearling

Fish in the various rearing units are fed during daylight hours by hand broadcasting fish food onto the surface of each active rearing unit at a frequency and size (granule/pellet) that depends on the age/size of the fish being reared. Feeding ranges from five times per day for fingerlings to once per day for yearling and older fish. The composition of this fish food varies from a high around 55 % protein and 1.2 % phosphate for fish up to fingerling size, to a low around 43 % protein and 1.0 % phosphate for fish 6 to 8 inches and larger in size. The size of this feed ranges from 0.25 to 0.56 millimeters (mm) for fish less than 1-inch in length to 3 to 6 mm for fish 6 to 8 inches and larger.

As mentioned earlier, solids in the culture water are generated from only two sources: fish feces and uneaten food particles. Water flows, on a continuous basis, through each of the various rearing units containing fish and entrains a portion of the fish feces and uneaten food in it; however, the bulk of these solids settle to the bottom of each rearing unit for later removal at regular intervals during the cleaning process. For permit purposes, hatcheries have two types of water flow that discharge pollutants to the receiving water. They are "overflow water" which flows continuously through the rearing units and contains insignificant concentrations of solids and, "cleaning water" which contains significant concentrations of settled solids from the bottom of individual rearing units. Cleaning water is herein defined as "water that contains settled solids that have accumulated on the bottom of active rearing units that is discharged along with a portion of the culture water directly to the receiving water during periodic cleaning operations". Due to the piping network at Powder Mill, all solids contained in either the "overflow water" or the "cleaning water" flow are presently discharged without treatment to waters of the United States. In Table 2 below, the various types of discharge waters have been categorized by outfall and rearing unit. This list represents the facilities current outfall configuration; however, in the near future, the NHF&GD contemplates consolidating outfalls 001 and 002 into one outfall and outfalls 006 through 010 into another outfall to their reduce sampling and analytical costs in their reissued permit.

Table 2. --*List of Discharges (Outfalls) to Receiving Water as Presently Exists (Pre-Draft Permit)*
[Refer to **Attachment C** for locations of outfall and rearing unit.]

Outfall Number	**Average Discharge**	**Discharging Unit**	**Type of Discharge Water**
001	1089 gpm (1.6 mgd)	Raceways G, H and I	Overflow and cleaning waters
002	80 gpm (0.12 mgd) from Hatchery House.	Hatchery House (HH) Raceways A, B, C and F Parking Lot	Overflow and cleaning waters (HH) Cleaning water from raceways Storm water from parking lot
003	---	All three Show Ponds	Drain water from Show Ponds
004	---	Old Granite Canal	Drain water from Old Granite Canal
005	---	Woods Pond #2	Drain water from Woods Pond #2
006	331 gpm (0.48 mgd)	Woods Pond #5	Overflow water
007	431 gpm (0.62 mgd)	Bass Ponds #1 and #2	Overflow water
008	528 gpm (0.76 mgd)	Bass Ponds #3 and #4	Overflow water
009	400 gpm (0.58 mgd)	Circular Tanks - Double row (Nine tanks each row for a total of 18 tanks)	Overflow and cleaning waters
010	200 gpm (0.29 mgd)	Circular Tanks - Single row (Nine tanks)	Overflow and cleaning waters

The water level in each of the linear raceways is controlled by flash boards at the downstream end. Just upstream of the flash boards are the fish retaining racks (screens) to keep fish within the individual raceway units/segments. Between the flash boards and the fish racks is a quiescent zone into which solids (fish feces and uneaten food particles) settle from the overflow water just before it discharges from the raceway. These settled solids are later removed at a regular frequency with a portion of the "flow through" water via the cleaning drain located in the base of this zone, hence the name "cleaning water". Since these raceways, due to their design, may not be completely self cleaning (i.e. solids settle out in the raceways upstream of the quiescent zone) manual sweeping of the raceway may be necessary during the quiescent zone cleaning (flushing and brushing). This bottom cleaning is performed by staff standing either in the rearing unit or just outside it hand brushing settled solid towards the bottom drain(s) located at the end of the linear raceways or in the center of the circular tanks. Normally, fish remain in their rearing units during these bottom cleaning operations. Because each major raceway rearing unit may contain two or more linear sub raceways, the drain(s) in each quiescent zone are opened one at a time for about five minutes. Circular tanks are cleaned by opening the outlet box, a rudimentary sediment trap, and flushing it for about one minute. Again, since the circular tanks may not be completely self-cleaning, staff may have to stand near the tank's center hand brushing settled solids towards each tanks bottom drain during the normal cleaning cycles. For example, a typical cleaning event in raceways G, H, and I lasts between 20 and 30 minutes and discharges about 9,075 gallons per raceway; whereas, a typical cleaning event in the circular tanks lasts between 7 and 8 minutes and discharges about 178 gallons per tank.

When in use, all seven linear raceways (A, B, C, F, G, H, I) and all 27 circular concrete tanks require routine cleaning at frequencies that range from once per week for younger fish to every two weeks for older fish or as needed. However, the Show, Woods and Bass Ponds are cleaned at yearly intervals or as needed. This is because the normal swimming action (i.e., tail movement) of fish raised in these shallow ponds, particularly in the Show and Woods Ponds, is sufficient to prevent solids from accumulating.

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

Normally, fish hatched from eggs at in the State's hatchery system take between 15 to 18 months to grow out to the proper size of length/weight for stocking. According to hatchery officials, the key to maintaining good fish health is to prevent pathogens from entering the hatchery and to maintain clean, healthy rearing units. However, when needed, U.S. Food and Drug Administration (FDA)-approved chemicals/drugs are used as therapeutants to maintain fish health. Below is a list of all the chemicals/drugs currently used in the New Hampshire State Fish Hatchery system along with their intended use, followed by a subset of that list for those recently used at the Powder Mill Hatchery. A review of the first eight chemicals/drugs in New Hampshire's overall list indicate they are all FDA approved therapeutants and/or low regulatory priority aquaculture drugs. For the last three chemicals (hypochlorite solutions, oxygen gas and a solution of iodine and phosphoric acid), EPA-New England will not regulate (limit their use) these chemicals as long as any applied hypochlorite solution is neutralized with sodium thiosulfate prior to it being exposed to culture water, and the practice of not discharging any of the iodine and phosphoric acid solution to the hatchery's culture water is continued. Adding oxygen gas to the culture water to increase its dissolved-oxygen

concentration is always appropriate and can only lead to increased dissolved-oxygen concentrations in the discharged effluent, always a positive environmental outcome.

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

- **Formalin - 37 % Formaldehyde Gas in Water with 16 % Methanol:** Added as needed to culture water to control external parasites on fish and eggs. Used primarily to kill swimming zoospores and filamentous hyphae of common mold (fungus) that attach to eggs, gills and/or skin as well as other active parasitic infections. The FDA restricts the use of formalin solution to three products with the following trade names: Formalin-F, Paracide-F and Parasite-S. Formalin is used sparingly at all the State's Fish Hatchery's, except Powder Mill, where it is used regularly each year from mid-July through late-October to control the *ich* parasite. During this period, formalin is used every other day except weekends when it is not used. In October, due to a drop in parasite levels, less Formalin is used and its use is confined to the circular tanks in the lower hatchery. According to FISHPRO, consulting engineers and scientists hired by the NHF&GD to evaluate the State's hatchery system, "The use of Merrymeeting Lake as the primary water supply untreated by disinfection technology subjects the facility to periodic episodes of protozoan (Ich) and facultative bacteria pathogens endemic to the lake. Ich is a serious problem requiring large volumes of formalin [fish approved and requested aquaculture therapeutic chemical (Parside F)] for treatment." (Quote from ***Final Report, New Hampshire Hatchery System Evaluation, page V-3, July 2002***).

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

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

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

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

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

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

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

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

- **Solution of Iodine and Phosphoric Acid:** Used to disinfect hatchery equipment only at the New Hampton hatchery. Used as needed and solution is *not* discharged to the culture water.

Review of the material safety data sheets for the above listed materials indicate that only **Formalin - 37 % Formaldehyde Gas in Water with 16 % Methanol** requires an effluent limitation because it is the only one with a reasonable potential to cause an exceedance of the New Hampshire's Surface Water Quality Regulations. See section entitled "Formalin" later in this Fact Sheet.

Chemicals, Drugs and Disinfectants Routinely Used at the Powder Mill Hatchery

- **Formalin - 37 % Formaldehyde Gas in Water with 16 % Methanol**
- **Polyvinylpyrrolidone (Iodine in 10 % aqueous solution) --Also called Povidone Iodine**
- **Romet 30 (Contains 25 % Sulfadimethoxine and 5 % Oremetoprim)**
- **Sodium Chloride (Crystalline Form)**
- **Calcium Chloride (Crystalline Form)**
- **Sodium Hypochlorite at 5.25 % (Ordinary Household Bleach in Liquid Form**)

A quantitative description of significant effluent parameters from the current permit's effluent-monitoring data collected for this facility during the 24-month period July 2001 through June 2003 shows: average monthly settleable solids (SS) ranged from 0.00 to <0.10 milliliters per liter; average monthly flow ranged from 4.53 to 6.00 mgd; and resident fish biomass population ranged from a low of 13,824 lbs in June (2002) to a high of 163,550 lbs in March (2002) just before the State's annual spring stocking. Compliance monitoring for SS limit in the current permit is based on a net calculation of effluent minus influent samples collected from the receiving water and not on effluent

samples collected from individual outfalls. Specifically, results of samples of the influent, lake water collected from the box at the base of Merrymeeting Lake, are subtracted from results of samples of the effluent, river water collected from Merrymeeting River at a point just downstream of the last effluent pipe (outfall 10). The reader is referred to **Attachment C** for approximate locations of the box and outfall 10. However, in the draft permit this practice will be replaced with actual monitorings from individual outfalls.

Several effluent parameters in the current permit were deleted by Region I (also now referred to as EPA-New England) in a letter dated August 28, 1975, in response to a request by the Nashua National Fish Hatchery for a permit modification to their permit issued on August 28, 1974. That letter deleted ammonia, pH, and total suspended solids (TSS) from all State and Federal Fish Hatchery permits in New Hampshire leaving only the SS parameter. However, a recent review of Powder Mill's monthly discharge monitoring reports shows that in addition to reporting the required "SS", the hatchery also routinely reports "Flow" and "Fish Biomass" data that resulted from an earlier compliance inspection by NHDES-WD personnel.

In recent permit issuances in New Hampshire, EPA-New England has switched to TSS from using SS because the analytical test results for TSS as compared to SS provides a more comprehensive measure of the total suspended solids content actually present in the discharge. Therefore, the Agency has chosen to limit TSS in the draft permit, in lieu of SS. The Agency considers that replacement neither an antibacksliding nor an antidegradation issue.

III. Limitations and Conditions.

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

Because both trout and salmon belong to the same family, *Salmonidae*, they have similar metabolisms and habitat requirements that allow them to coexist in the same stream, thus this draft permit allows for the growth of both species at this facility.

IV. Permit Basis and Explanation of Effluent Limitations Derivation.

A. Basic Regulatory Framework --Applicable Federal and State Regulations

The Clean Water Act (ACT) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the ACT. The NPDES permit is the mechanism used to implement technology and water-quality based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the ACT and any applicable State administrative rules. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136. Many of these regulations consist primarily of management requirements

common to all permits.

EPA is required to consider technology and water-quality based criteria in addition to the current permit conditions when developing permit limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the ACT (See 40 CFR Part 125, Subpart A).

In general, statutory deadlines for meeting technology-based guidelines (effluent limitations) established pursuant to the ACT have expired. For instance, compliance with the newly promulgated effluent limitations guidelines for fish hatcheries is, effectively, from date of permit issuance [40 CFR Section125.3(a)(1)(ii)]. Compliance schedules and deadlines not in accordance with the statutory provisions of the ACT cannot be authorized by a NPDES permit.

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

Water-quality based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water-quality standards. See Section 301(b) (1)(C) of the ACT. A water-quality standard consists of three elements: (1) beneficial designated use or uses for a waterbody or a segment of a waterbody; (2) a numeric or narrative water-quality criteria sufficient to protect the assigned designated use(s); and (3) an antidegradation requirement to ensure that once a use is attained it will not be eroded. Receiving water requirements are established according to numerical and narrative standards in the state's water quality standards adopted under state law for each stream classification. When using chemical-specific numeric criteria to develop permit limits both the aquatic-life acute and chronic criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. Aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 CFR Section 122.44 (d)(1) and are implemented under 40 CFR Sections 122.45(d) and (f). Therefore, the Region establishes maximum daily and average monthly limits for chemical specific toxic pollutants based, in part, on a reasonable measure of the facility's actual or projected flow rates on a average monthly and a maximum daily basis for all production-based facilities that have a continuous discharge. However, for hatcheries, the average daily discharge needed for full utilization of a given rearing unit is used for both maximum daily and average monthly limits for the flow is basically constant from day to day and week to week. Also, the dilution provided by the receiving water is factored into this process. Furthermore, narrative criteria from the state's water-quality standards are often used to limit toxicity in discharges where: (1) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard, such as for formalin; or (2) toxicity cannot be traced to a specific pollutant.
The NPDES permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water-quality criterion. See

CFR Section 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers: (1) existing and planned controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit's reissuance application, Monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in **Technical Support Document for Water Quality-based Toxics Control**, **March 1991**, **EPA/505/2-90-001** in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire statutes and administrative rules (50 RSA 485-A:8, Env-Ws 1705.02), available dilution for discharges to freshwater receiving waters is based on a known or estimated value of the annual seven consecutive-day mean low flow at the 10-year recurrence interval (7Q10) for aquatic life or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the discharge. Furthermore, 10 % of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01. The current set of these Regulations, newly revised, were adopted on December 3, 1999, and became effective on December 10, 1999. Hereinafter, these New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

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

The ACT requires that EPA obtain State Certification which states that all water-quality standards will be satisfied. The permit must conform to the conditions established pursuant to a State Certification under Section 401 of the ACT (40 CFR §124.53 and §124.55). EPA regulations pertaining to permit limits based upon water-quality standards and state requirements are contained in 40 CFR §122.44(d).

The conditions of the permit reflect the goal of the ACT and EPA to achieve and then to maintain compliance with the State's water quality standards. To protect the existing quality of the State's receiving waters, the NHDES-WD adopted Antidegradation requirements (Env-Ws 1708) in their NH Standards.

B. Effluent Limitations and Monitoring Parameters for the Powder Mill Hatchery

Technology-Based Effluent Limitations

On August 23, 2004, the Agency promulgated new Effluent Limitations Guidelines and New Source Performance Standards (hereinafter referred to as ELGs) for discharges from Concentrated Aquatic Animal Production (CAAP) facilities as defined at 40 CFR Section 122.24 and Appendix C of 40 CFR Part 122. Typically, ELGs express effluent limitations in the form of numeric standards for specific pollutants, but this ELG expresses effluent limitations in the form of narrative standards in order to achieve reduced discharges of total suspended solids (TSS) and other materials that are generated during the process of culturing (raising) fish. These new ELGs apply to the discharge of pollutants from facilities that produce 100,000 pounds or more of aquatic animals per year using flow-through, recirculating, net pen or submerged cage systems and became effective on September 22, 2004 [See Federal Register (FR) on August 23, 2004 (69 FR 51892-51930)]. Because the Powder Mill hatchery meets the definition of a CAAP at 40 CFR Section 122.24(b), operates as a flow-through system, and produces more than 100,000 pounds of aquatic animals per year (See Fact Sheet, top of page 3), it is subject to these newly promulgated ELGs.

Accordingly, the general reporting requirements detailed in 40 CFR Section 451.3 have been incorporated into the draft permit. They require the permittee to report drug usage, spills, structural failure and/or damage to rearing units as well as to develop, implement and maintain a best management practices (BMP) plan for the facility. The BMP must address solids control, materials storage, structural maintenance of culture units and related equipment, recordkeeping and training at the hatchery. Section 451.3 also allows the permitting authority to modify the required BMP plan requirements based on its exercise of best professional judgement (BPJ). Based on the Agency's BPJ authority, three additional categories have been added to the draft permit: (1) detailing precautions taken to prevent aquatic organisms that are not indigenous nor naturalized to New Hampshire waters from becoming established in local surface waters; (2) identifying and quantifying all aquaculture drugs and chemicals used at this facility; and (3) describing where settled solids are placed after removal from culture units. The Agency believes these additional requirements are needed to protect the receiving waters from release of non-indigenous species and to better understand the full range of aquaculture drugs and chemicals used in the treatment of pathogens at this facility and their potential for discharge to the environment.

One of the BMP plan requirements stipulated in Section 451.11(a) requires the permittee to implement procedures for the routine cleaning of rearing units and off-line settling basins to minimize the discharge of accumulated solids from settling ponds and basins and production systems. This hatchery employees quiescent zones in the rearing units/culture water tanks as the primary means of removing settle solids in the culture unit. Periodically, a plug in the bottom of the quiescent zone is opened and the scouring action created by culture water moving to and through this opening suspends and removes the accumulated bottom sediments discharging them directly to the receiving water. In the preamble of Part 451 ELGs (69 FR page 51908), "EPA has determined that primary treatment in the form of quiescent zones in the culture water tanks and settling ponds by themselves are not the best technology available for treating TSS. Instead, rigorous feed management in

conjunction with good solids handling practice constitutes a better technology for controlling this pollutant." [Editor's note: "…this pollutant" means TSS] EPA-New England has made a BPJ determination as allowed in 40 CFR Section 451.11 that the direct discharge of settled solids from active rearing units to a receiving water absent any form or off-line settling or equivalent solids removal does not constitute "good solids handling practice"; therefore, EPA-New England has decided to prohibit this practice in the draft permit since the intent of these regulations and the ACT is to "...reduce the pollutant loads discharged to the receiving streams."

Even though the CAAP's ELG does not require monitoring to judge the effectiveness of the BMP plan, there is no prohibition against such monitorings in the newly promulgated regulations. Monitoring will ascertain the range of pollutant concentrations discharged to the receiving water from individual rearing units, thus enabling the Agency to determine if those levels of suspended solids and associated biodegradable loads cause or contribute to an exceedance of NH Standards (detrimental effect on the receiving water). Therefore, EPA-New England has decided to monitoring (report only, no limits) on a quarterly basis, the concentrations and loads of TSS and Biochemical Oxygen Demand (BOD_5) in the overflow water discharged from the various rearing units to, among other things, monitor the effectiveness of the BMP plan coupled with no direct discharge of cleaning water.

Disposal Options for Settled Solids in Cleaning Water

While State Fish and Game officials have not yet decided on the precise method they will employ to remove settled solids from the bottom of individual rearing units (raceways, tanks and/or ponds) lacking off-line settling, they are contemplating using some type of a vacuum filtration system (i.e., equivalent to off-line settling). In addition, they are contemplating using rearing units, or portions thereof, for the "temporary storage" of the solids that have been either vacuumed from active raceways or whose cleaning water flows have been diverted there through re-piping for settling. Recent phone conversations with officials of the NHF&GD indicate that "temporary storage" could mean for as little as a few days to as long as a few months. It also appears that exact details of how NHF&GD intends to manage these solids is still evolving, but their current thinking is to store them uncovered in empty raceways (inactive culture units containing no fish) and to decant any water that accumulates above those settled solids and discharge it with overflow water from active raceways or other permitted outfalls. Material cleaned from the rearing units is composed of about five percent solids. Only during the winter period (freezing conditions), will NHF&GD flood the raceways, allowing water to pass slowly over these solids to prevent them from freezing, expanding and damaging the raceway structures.

In this context, the NHF&GD is using these raceways as clarifiers. EPA-New England concurs with this assessment as long as the discharge end of those raceways used for temporary storage of settled solids is engineered to prevent the discharge of floatables, foams, scums and/or solids. Accordingly, there should be no exceedances of the issued permit.

Settled solids removed from rearing units are managed as manure by the New Hampshire Department of Agriculture. This regulatory determination was made by New Hampshire Department of Environmental Services, Water Division's (NHDES-WD) in a letter dated August 6, 2003, after samplings indicated that the residuals are non-hazardous and contain no domestic sewage components. In addition, settled solids removed from fish hatcheries are not regulated by EPA-New England as sludge.

The NHF&GD informs the Agency that they have received several inquiries from parties willing to take both forms of the settled solids: that is, the liquid form (composed of about five percent solids), and the semi-dry form (most of the water removed). These settled solids removed from the temporary storage units will likely be either land applied on local agricultural land or used directly in a variety of greenhouse operations.

Water-Quality Based Limitations

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, metals, etc. are determined from chemical specific numeric criteria derived from extensive scientific studies. The specific toxic pollutants and their associated toxicity criteria are popularly know as the "Gold Book Criteria" which EPA summarized and published in ***Quality Criteria for Water,* 1986, EPA 440/5-86-001 (as amended)**. The State of New Hampshire adopted these "Gold Book Criteria", with certain exceptions, and included them as part of the State's recently revised Surface Water Quality Regulations adopted on December 3, 1999. EPA-New England uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit, such as the fast acting toxicant chlorine or ammonia, metals, etc.

Available Dilution

Available dilution (also referred to as dilution factor) provided by the receiving water is determined using the hatchery's average daily discharge along with the stream's annual 7Q10 low flow of the receiving water (Merrymeeting River) just above the hatchery's outfalls. The available dilution is reduced by 10 % to account for the State's reserve capacity rule. The State's requirement to reserve 10 % of the Assimilative Capacity of the receiving water for future needs is pursuant to New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01 and was first included with the State's Surface Water Quality Regulations beginning with the April 1990 revisions. Inclusion of the State's reserve capacity rule is new to this draft permit for it was not included in the current permit.

Frequently, a gaged value of a stream's annual 7Q10 low flow just above the outfall is not available; therefore, other methods are utilized, such as determining an estimate of that value from a gaged location elsewhere on the receiving water or on a nearby river thought to have similar hydrologic characteristics as the receiving water, or regression equations such as the Dingman Equation that uses drainage area, mean basin elevation and percent of stratified drift to total drainage area.

However, in this situation, the hatchery is located just below the outlet of Merrymeeting Lake where

it has been reported by the NHDES Dam Bureau, operator of the dam, that each year there are many days during the summer months where little or no flow discharges to the overflow channel from the lake's outlet. 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). This fact, coupled with the continuous discharge of overflow water from 7 outfalls, all occurring within a short distance of each other, has lead the Agency to conclude that the Merrymeeting River opposite the hatchery has no dilution available for diluting discharges from any of the hatchery's outfalls.

pH Limits Including Related Conditions

The limits (range) in pH are based upon limits in the current permit in accordance with the antibacksliding requirements found in 40 CFR §122.44(1) since the permittee has been able to achieve consistent compliance with these limits. Historically, the NHDES-WD has required pH limits to be satisfied at end-of-pipe with no allowance for dilution. That concept was codified into the NH Standards at Env-Ws 1703.06(b); therefore, has become a State Water Quality Standard.

However, a change in the pH range in the draft permit due to in-stream dilution would be considered if the applicant can demonstrate, to the satisfaction of NHDES-WD, that the in-stream NH Standards for pH would be protected. Upon satisfactory completion of a demonstration study, the applicant or NHDES-WD may request in writing that the permit limits be modified by EPA-New England to incorporate the results of the demonstration.

Anticipating the situation where NHDES-WD grants a formal approval changing the pH limit(s) to outside the 6.5 to 8.0 Standard Units (S.U.), EPA-New England has added a provision to this draft permit (See SPECIAL CONDITIONS section). That provision will allow EPA-New England to modify the pH limit(s) using a certified letter approach. See STATE PERMIT CONDITIONS in the draft permit. However, the pH limit range cannot be less restrictive than 6.0 - 9.0 S.U. which is the pH range consistently applied in National Effluent Limitation Guidelines.

If the State approves results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR 122.44(l)(2)(i)(B) because it will be based on new information not available at the time of this permit's issuance. This new information includes results from the pH demonstration study that justifies the application of a less stringent effluent limitation. EPA-New England anticipates that the limit determined from the demonstration study as approved by the NHDES-WD will satisfy all effluent requirements for this discharge category and will comply with NH Standards with regard to instream conditions.

Total Residual Chlorine

Even though hypochlorite solutions are used at the hatchery, EPA-New England does not believe their use as described earlier in this Fact Sheet under "Chemicals, Drugs, and Disinfectants Used Throughout New Hampshire's State Fish Hatcheries" will lead to its presence in the effluent, given that the hypochlorite solutions are not discharged 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. Also, if any residual hypochlorite solution should remain on the equipment following neutralization, it would dissipate in the large volume of culture water prior to its discharge. Therefore, EPA-New England has determined that the hatchery's discharge has no reasonable potential to cause, or contribute to an instream excursion above the numeric water-quality criteria for total residual chlorine (TRC) in the NH Standards. However, if a TRC limit was ever needed, a maximum daily limit of 19 micrograms per liter (µg/l) and an average monthly TRC limit of 11 µg/l would be established corresponding to the TRC acute and chronic aquatic-life criteria of 19 and 11 µg/l, respectively, in the NH Standards. Criteria values from the NH Standards would become the limits because there is no available dilution in the receiving water.

Nutrients (Nitrogen and Phosphorus)

The permittee should be aware that EPA has published recommended water-quality criteria for nutrients, such as Total Phosphorus and Total Nitrogen, as well as other response parameters, such as turbidity and chlorophyll-*a* (chl-*a)*, to control the excessive levels of nutrients in discharges to the nation's surface waters. The recommended criteria cover four major types of waterbodies – lakes and reservoirs, rivers and streams, estuarine and coastal areas, and wetlands across the major Ecoregions of the United States. EPA's recommended Section 304(a) criteria are intended to provide for the protection and propagation of aquatic life and recreation. As the reader can see, the Hatchery's discharge could be impacted by the criteria for the rivers and streams category.

The NHDES-WD has indicated to EPA-New England that it intends to adopt either EPA's recommended nutrient criteria or its own version of them in their next revision of the NH Standards. EPA's ***Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria for Rivers and Streams in Nutrient Ecoregion XIV*, EPA, Office of Water, EPA 822-B-00-022, December 2000**, indicates that for subecoregion 59 (Hatchery's location within Ecoregion XIV, subecoregion 59) criteria values around 0.008 mg/l for total phosphorus (dissolved plus particulate) as P and 0.32 mg/l for total nitrogen (ammonia, organic, nitrate and nitrite) as N are reasonable estimates for purposes of this discussion. When criteria are established in the NH Standards, they will become the limits that the hatchery's discharge must meet, given its available dilution factor of 1.0 with the receiving water. In its guidance, EPA proposes to establish two "casual" parameters, those for nitrogen and phosphorus, and two "response" parameters, those for chl-*a* and a measure of water clarity - secchi disk for lakes and turbidity for other waterbodies such as rivers and streams.

Accordingly, the draft permit requires total nitrogen and total phosphorus monitorings to be performed quarterly along with the BOD_5 and TSS sampling to obtain data necessary to evaluate the impact of these pollutants on the quality of the receiving water. The Agency expects that the ban on direct discharge of cleaning waters, coupled with efficient feed management and feeding strategies (fish food has a phosphorus content that varies from 1.0 to 1.2 %), will minimize nutrient discharges from these sources.

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-Ws 1703.07(b)].

There are several factors which make dissolved oxygen in the effluent 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 significantly depress in-stream concentrations; and (4) lack of reaeration potential in the stretch of receiving water adjacent to and downstream of the hatchery, meaning that dissolved-oxygen concentrations in Merrymeeting River could be significantly affected by the discharges from the hatchery, particularly if oxygen demand from effluent BOD_5 or degradation of formalin is significant.

Accordingly, it is critical that effluent dissolved-oxygen concentrations be maintained at levels that will not cause or contribute to violations of NH Standards. The draft permit requires regular monitoring of the effluent for dissolved-oxygen concentration and also requires special monitoring at times when formalin is being used. The permit further requires that the percent saturation be calculated from the dissolved-oxygen concentration to determine if the discharge causes or contributes to exceedances of that part of the NH Standards in Merrymeeting River.

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 formaldehyde gas. Formalin is used for the therapeutic treatment of fungal infections on the eggs of finfish and to control certain external protozoa and monogenetic trematodes on all finfish species. This means that formalin is more toxic to the invertebrate species than to vertebrates, for it is formulated to selectively kill certain attached organisms, but not the finfish themselves when properly applied. Therefore, when setting the necessary permit limits to protect the receiving water's aquatic environment from the effects of formalin in a discharge, it is more important to develop limits to protect invertebrates species over the vertebrates species, for the former are more sensitive to the effects of formalin's active ingredient (formaldehyde). In the receiving waters, these invertebrates are an integral part of the food chain for finfish.

Formalin use should be consistent with U.S. Food and Drug Administration (FDA) labeling instructions as per 21 CFR Section 529.1030. Per those instructions, formalin is to be used only 1-hour per day per raceway, tank and/or in-line settling pond for the treatment of finfish. Finfish eggs may be treated 15 minutes per day following FDA guidelines. Prophylactic use of formalin is strictly prohibited.

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 the N.H. Code of Administrative Rules, PART Env-Ws 1703.21(a)(1). Therefore, in the absences of specific formalin or formaldehyde aquatic-life acute and chronic criteria in the NH Standards, EPA-New England has decided to impose formaldehyde limits in the draft permit based on acute and chronic aquatic-life criteria taken from the ***Derivation of Ambient Water Quality Criteria for Formaldehyde*, Hohreiter, David W. and Rigg, David K., Journal of Science for Environmental Technology in Chemosphere, Vol. 45, Issues 4-5, November 2001, pgs. 471-486**, thus ensuring Env-Ws 1703.21(a)(1) is satisfied. EPA-New England believes that since these criteria were developed in accordance with the United States Environmental Protection Agency's (U.S. EPA's) ***Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*** they are appropriate for use in limit setting purposes. From that publication, the acute and chronic aquatic-life criteria for formaldehyde are 4.58 and 1.61 mg/l, respectively. [Note: To express formaldehyde aquatic-life criteria as formalin criteria divide formaldehyde criteria by 0.37 for formalin contains 37 % formaldehyde.] Since the effluent will be analyzed for formaldehyde portion of formalin, average monthly and maximum daily limits for formaldehyde of 1.6 and 4.6 mg/l, respectively, have been set in the draft permit. Because available dilution in the receiving water at 7Q10 flow is 1.0, or no dilution, the acute aquatic-life criteria becomes the maximum daily limit and the chronic aquatic-life criteria becomes the average monthly limit. These limits apply at all times, but the monitoring requirements in the draft permit are "when-in-use", since formalin's primary use is July through October and sparingly at other times.

For this permit, the minimum quantification level (ML) for formaldehyde is established in Method 1667, Revision A is 0.050 mg/l or 50 µg/l. In accordance with EPA's ***Technical Support Document for Water Quality-based Toxics Control***, **EPA/505/2-90-001, March 1991**, page 111, EPA New England is defining the compliance level in the permit as the minimum quantification level (ML).

Therefore, the limit at which compliance/non-compliance determinations will be judged is a ML of 50 µg/l and this ML value may be reduced by permit modification as more sensitive test methods are approved by EPA. Any value below the ML shall be reported as zero until written notice is received by certified mail from EPA-New England indicating some value other than zero is to be reported for a given ML (i.e., between zero and the ML).

C. Antidegradation

This draft permit is being reissued with allowable wasteloads and parameter coverages more stringent and comprehensive than in the current permit with no change in location for the existing outfall. The State of New Hampshire has indicated that there is no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted at this time.

D. Additional Requirements and Conditions

The effluent monitoring requirements in the draft permit, and shown in Table 3 on the next page have been established to yield data representative of the discharge under the authority of Section 308(a) of the ACT in accordance with 40 CFR §§§ 122.41(j), 122.44(i) and 122.48. It is the intent of EPA and NHDES-WD to establish minimum monitoring frequencies in all NPDES permits at permit modification and/or reissuances that make sense from both an environmental and human health perspectives. Compliance monitoring frequency and sample type have been set after considering the intended purpose and use of the data, configuration of the physical plant including its flow and feeding regimes at the hatchery. Normally, monitoring frequencies in NPDES permits issued in New Hampshire are set according to a EPA/NHDES-WD's Effluent Monitoring Guidance (EMG) mutually agreed upon and first implemented in March 1993 and last revised on July 19, 1999. However, because that guidance was developed for use in permitting Publicly Owned Treatment Works (POTWs) and industrial facilities, it is not applicable to hatcheries; therefore, has not been used to set monitoring frequencies in this draft permit. See Table 3 for a comparison of sampling frequencies and sample types in the current versus new draft permits.

At the New Hampshire hatcheries, a "24-Hour Composite" sample type is required for effluents that discharge to receiving waters without passing through any type of settling (pond or device). However, given that this facility needs to (1) consolidate outfalls; (2) purchase samplers (the facility has none); and (3) install those samplers so as to function properly in the harsh winter environment, the Agency has decided to allow NHF&GD to collect "Grab" samples in lieu of "24-Hour Composite" samples up through November 30, 2005. This grace period will allow sufficient time for the facility to accomplish these tasks purchasing only those samplers actually needed to monitor the consolidation outfall array.

The effluent monitoring requirements in the draft permit have been established to yield data representative of the discharge under the authority of Section 308(a) of the ACT in accordance with 40 CFR §122.41(j), §122.44(i) and §122.48.

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

Table 3. --*Sampling Frequencies and Sample Types in the Current and Draft Permits*
(Changes to Current Permit are highlighted under Draft Permit. In addition, a "M" or "L" below the Parameter indicates it's either "Monitored-Only" or "Limited" in the draft permit.)

PARAMETER	CURRENT PERMIT		DRAFT PERMIT	
	Sampling Frequency	**Sample Type**	**Sampling Frequency**	**Sample Type**
Settleable Solids	1/Month	3 Grabs	Eliminated	Eliminated
Flow (M)	Not Required	Not Required	1/Week	Weir calculation or other approved method
pH (L)	Not Required	Not Required	1/Week	Grab
TSS (M)	Not Required	Not Required	1/Quarter	24-Hour Composite
BOD_5 (M)	Not Required	Not Required	1/Quarter	24-Hour Composite
Total Nitrogen (as N) (M)	Not Required	Not Required	1/Quarter	24-Hour Composite
Total Phosphorus (as P) (M)	Not Required	Not Required	1/Quarter	24-Hour Composite
Fish Biomass on Hand (M)	Not Required	Not Required, but are reporting	Monthly	Calculation
Fish Feed Used (M)	Not Required	Not Required	Monthly	Calculation
Efficiency of Fish Feed Used (M)	Not Required	Not Required	Monthly	Calculation
Dissolved Oxygen (M)	Not Required	Not Required	1/Month (Formalin Absent)	Grab
Dissolved Oxygen Saturation (M)	Not Required	Not Required	1/Month (Formalin Absent)	Calculation
Water Temperature (M)	Not Required	Not Required	1/Month (Formalin Absent)	Grab
Formaldehyde (L)	Not Required	Not Required	1/Week (Formalin Present)	Grab
Dissolved Oxygen (M)	Not Required	Not Required	1/Week (Formalin Present)	Grab

V. Essential Fish Habitat.

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. 16 U.S.C. § 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of EFH. 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

EFH is only designated for fish species for which federal Fisheries Management Plans exist. 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

EFH Species

The Merrimack River and its tributaries are designated EFH for Atlantic salmon (*Salmo salar*) ".....including all tributaries to the extent they are currently or were historically accessible for salmon migration". While water from the Merrymeeting River ultimately flows into the Merrimack River, that water must first flow through two lakes (Winnipesaukee and Winnisquam), then into the Winnipesaukee River which combines with the Pemigewasset River to form the Merrimack River.

It is EPA-New England's opinion that while the Merrymeeting River may not constitute EFH for anadromous Atlantic salmon due to its relative isolation from the mainstem of the Merrimack River, this draft permit does satisfy NH Standards which are considered by EPA-New England and the NHDES-WD to be protective of all aquatic species including those fish listed under EFH as well as other lesser aquatic organisms. Therefore, there should be no impacts to the water quality or the habitat of the receiving water or to the downstream waters, such as Lake Winnipesaukee, as a result of this discharge for the EFH species of concern or for other species of fish that are stocked in Merrymeeting River or in Lake Winnipesaukee.

It should be noted that while NHF&GD does not stock anadromous Atlantic salmon in the Merrymeeting River it does stock "surplus" fingerling land-locked Atlantic salmon (LLS) into that river as well as yearling LLS into Lake Winnipesaukee each May in support of an active recreational fishery in that lake. Furthermore, if the annual hatching of LLS eggs at the hatchery results in more fingerlings than are needed for grow out to that years target yearling stocking number, then surplus fingerlings are released into the Merrymeeting River.

EPA-New England's Opinion of Probable Impacts

Based on the permit limitations and requirements in the draft permit and discussed in the Fact Sheet that are designed to protect aquatic species, this authorized discharge is not likely to adversely affect the federally managed species, their forage or their habitat in the receiving water. This is particularly true given that the direct discharge of settled solids from active rearing units to the receiving water absent any form of off-line settling or equivalent solids removal has been prohibited and the discharge of Formalin is being regulated to assure that no toxics in toxic amounts are being released to the receiving water. If adverse effects do occur in the receiving water as a result of this permit action, or if new information becomes available that changes the basis for this conclusion, then NMFS will be notified and consultation will be promptly initiated.

Mitigation

The EPA-New England considers the conditions in this draft permit to be sufficient to protect the EFH species of concern, namely Atlantic salmon; therefore, does not consider further mitigation to be warranted at this time.

VI. State Certification Requirements.

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate the State's Surface Water Quality Regulations or waives its right to certify as set forth in 40 CFR §124.53.

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

The NHDES-WD is the certifying authority. EPA-New England has discussed this draft permit with the staff of the Water Division and expects that the draft permit will be certified. Regulations governing State Certification are set forth in 40 CFR §§124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the ACT, Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since certification is provided prior to permit issuance, failure to provide this statement for any condition waives the right to certify or object to any less stringent condition which may be established by EPA-New England during the permit issuance process following public noticing as a result of information received during that noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the ACT or State law, the State should include such conditions and, in each case, cite the ACT or

State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition.

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 applicable procedures of 40 CFR Part 124.

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

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to: Mr. Roger A. Janson, Director NPDES Permit Program for Municipal Permits, U.S. Environmental Protection Agency, One Congress Street, Suite 1100 (Mail Code: CPE), Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA-New England and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least 30 days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA-New England's Boston office.

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

VIII. EPA/State Contacts.

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

Mr. Frederick B. Gay, Environmental Engineer
U.S. Environmental Protection Agency
Office of Ecosystem Protection
One Congress Street
Suite 1100, Mail Code: CPE
Boston, Massachusetts 02114-2023
Telephone No.: (617) 918-1297
FAX No.: (617) 918-0297

_____ **Linda M. Murphy, Director**
Date: **Office of Ecosystem Protection**
U.S. Environmental Protection Agency

ATTACHMENT A

This attachment is for CAAP facilities regulations.

CAAP REGULATIONS ATTACHED BY STAPLE TO BACK OF THIS PAGE

ATTACHMENT B

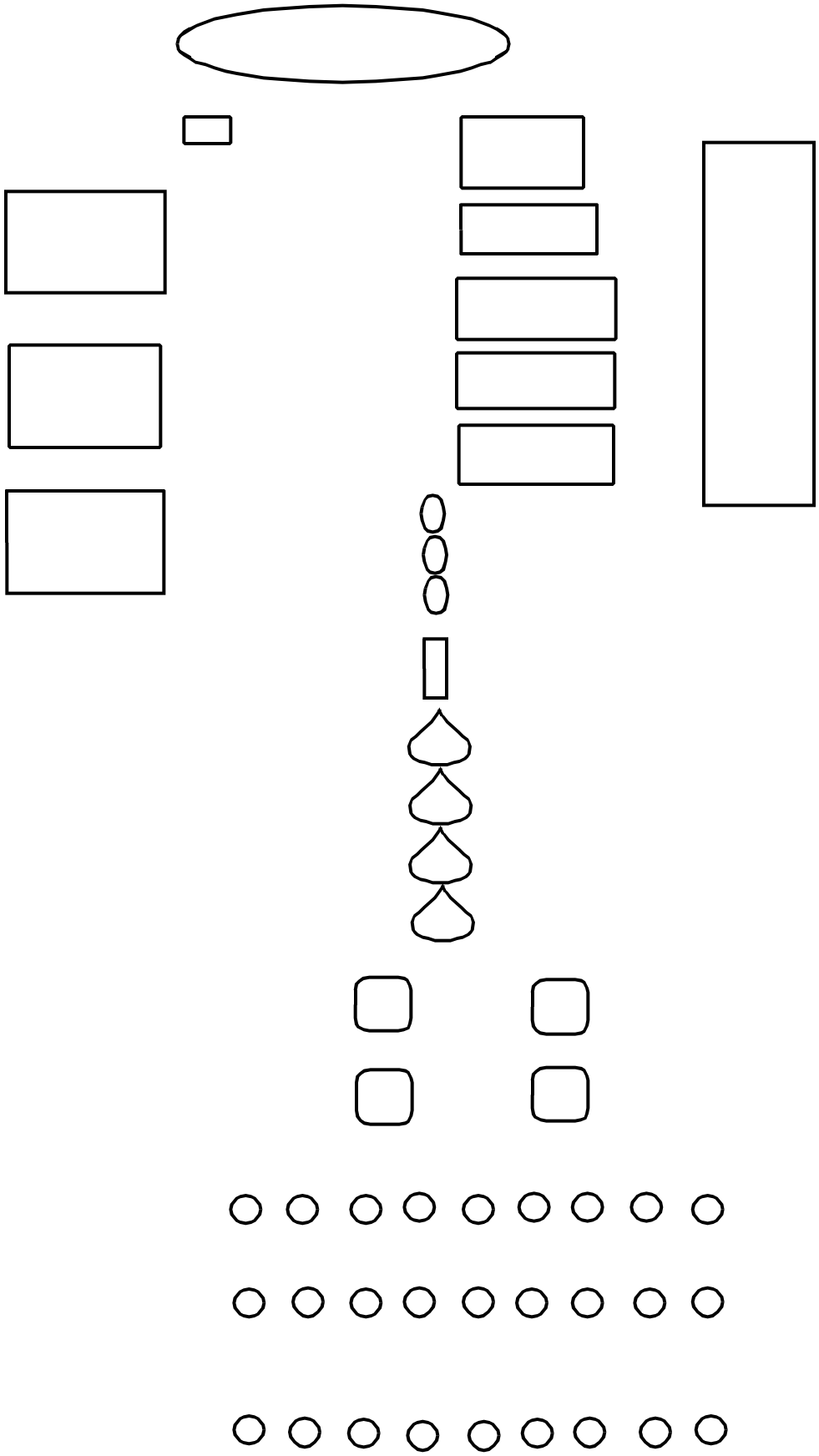
This attachment is for the overview map of the area–that is the USGS Topographic Map.

OVERVIEW MAP ATTACHED BY STAPLE TO BACK OF THIS PAGE

Powder Mill Hatchery

Lake's Outlet

Merrymeeting River

ATTACHMENT C

Water Flow Diagram to/from Various Rearing Units