

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

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

NPDES PERMIT NO: **MA0005398**

NAME AND ADDRESS OF APPLICANT:

**United States Fish and Wildlife Service
North Attleboro National Fish Hatchery
144 Bungay Road
North Attleboro, MA 02760**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**North Attleboro National Fish Hatchery
144 Bungay Road
North Attleboro, MA 02760**

RECEIVING WATERS: **Bungay River** (Ten Mile River Watershed - MA-52-06)

CLASSIFICATION: **B - Warm Water Fishery**

I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency for the re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit was issued August 8, 2002. It will expire October 8, 2004. A re-application was submitted and the permit continued in force, under 40 CFR 122.6.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The facility is a federal hatchery, which is engaged in Atlantic salmon kelt reconditioning and egg production. The facility is located at the headwaters of the Bungay River in the Ten Mile River Watershed. The discharge is culture water.

In 2001, the US Fish and Wildlife Service requested that the facility be excluded from the National Pollution Discharge Elimination System (NPDES) on the grounds that the facility production weight is well below the criteria set forth at 40 CFR 122.24 Appendix C. Title 40 CFR 122.24 (c) provides for a case-by-case designation of concentrated aquatic animal production facilities by the Director upon determining that it is a significant contributor of pollution to waters of the United States. In making the designation, the Director shall consider the following factors: (i) The location and quality of the receiving waters of the United States; (ii) the holding, feeding and production capacities of the facility; (iii) the quantity and nature of the pollutants reaching waters of the United States; and (iv) other relevant factors. EPA has designated the North Attleboro National Fish Hatchery as a Concentrated Aquatic Animal Production Facility and therefore, requiring an NPDES permit. The

decision was based on the facility's operation of an upstream dam and the potential impact on streamflow as well as the use of toxics.

The facility's discharge outfall is listed below:

<u>Outfall</u>	<u>Description of Discharge</u>	<u>Outfall Location</u>
001	Hatchery Effluent	Bungay River

III. DESCRIPTION OF DISCHARGE

A quantitative description of the discharge in terms of significant effluent parameters based on recent discharge monitoring reports (DMRs), July 2002 through June 2004, is shown on Attachment A of this fact sheet.

IV. LIMITATIONS AND CONDITIONS

The effluent limitations and monitoring requirements may be found in the draft NPDES permit.

V. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. PROCESS DESCRIPTION

Operations at the North Attleboro National Fish Hatchery have not changed significantly since the issuance of its current permit in 2002. Presently, the facility's primary responsibility is salmon reconditioning and egg production. Sea-run Atlantic salmon females from the Connecticut and Merrimack Rivers are reconditioned for continued egg production. The North Attleboro facility also incubates eggs from the Nashua National Fish Hatchery.

The facility consists of eleven (11) earthen ponds, two (2) raceways and nineteen (19) concrete pools (See Figure 1). Present operation does not include use of the earthen ponds.

The hatch house consists of a food preparation area, an incubation area and a set of 3 raceways. The facility has developed a special diet which is prepared on-site. Wastes from the preparation of the food is sent to the on-site septic system.

Salmon undergoing reconditioning and brood stock are held in concrete pools which are located behind the hatch house building in greenhouse-like enclosures. There are 19 concrete pools, not all of which are in use. Cleaning is done by scrubbing the pools with a stiff brush and then the wastewater is drained through a center drain.

Water is supplied by three (3) on-site groundwater wells and a small brook/pond for cold water fish culture operations. Two wells are the primary water supply and operate 24 hours per day except for maintenance or other problems. The third well is used for loading fish distribution trucks. Pond water is used when warm water is required in the summer, or as cold water in the winter months for specific fish culture needs. Pond water may also be used as a backup cold water source for fish egg incubation during an emergency.

Water from the wells and pond can be discharged or reused in one of all of the 11 earthen fish production ponds. The hatchery has rights to a limited amount of water from Greenwood Lake to supply the 11 earthen ponds, that are approximately one acre in size. Greenwood Lake is located adjacent to the hatchery grounds and outflow is controlled by a dam owned and managed by the U.S. Fish and Wildlife Service.

Water is supplied from wells through 8" pipes that are connected at the fish production pools (See Figure 2). Water from both wells can then be delivered to all systems on station, including 18 circular fish production pools, one display pool, hatchery building tank room, and egg incubation room. Water enters production pools through packed columns and the display pool through a spray bar where degassing and oxygen saturation occurs. Water is generally used once and then discharged to one of 7 control boxes where aeration reoccurs. From here, well-oxygenated water is generally discharged to drain lines but can also be re-circulated, if practical. Because of the facilities set-up and fish production programs there are several options for use of discharged water and several release avenues.

Option 1 - Once water enters the drain lines, it flows south to Bungay River (just south of Bungay Road) through three (3) vented boxes. Downstream from the discharge point is installed a slanted vertical bar rack that is designed to aerate all water flow (including water from pond, Greenwood Lake and Bungay Road runoff) and prevent escapement and wild fish from entering the discharge line.

Option 2 - At the third (nearest to Bungay Road) vented box in the drain line are valves provided to divert drain water to the earthen ponds by gravity flow through a 16" pipe. Several of these ponds could be designated as treatment lagoons. Water exiting all but one pond enters a discharge canal and flows south to join the Bungay River near the southern boundary. One pond discharges into the Bungay River.

Option 3 - At the first vented box in the drain line, near the visitor's parking lot, are valves to divert drain water to two earthen raceways that are parallel to the hatchery's driveway. The raceways (fish rearing areas) are filled with natural vegetation and have a combined length of about 350 feet.

Water flows over dam boards for aeration at the end of the raceways and is then discharged to the Bungay River.

Water can also be diverted to the earthen ponds at the end of the last raceway near the dam boards.

Water used inside the hatchery building tank room is once through. Packed columns are used for degassing and oxygen saturation. Pond water is processed through a water filtration system, ultra violet water sterilizer and a degassing/saturation system before use on eggs or young fish. Well water is primarily used for egg incubation because of poor pond water quality and is processed through a water chiller unit and a mechanical degassing/saturation system. Approximately 65% of the chilled incubation water is reused and remaining water is discharged to the drain lines.

When needed the following drugs and chemicals are used:

- 1) Tricaine Methanesulfonate (Western Chemical, Inc.) - Intended for the temporary immobilization of fish, amphibians and other cold-blooded animals.
- 2) Roccal - A chemical disinfectant use for the disinfection of equipment. According to MSDS information provided by the manufacturer, Roccal is toxic to fish and must be kept out of lakes, streams and ponds. Proper disposal methods are incineration

or small quantities may be diluted with water and disposed to the sanitary sewer. EPA toxicology data indicates that Roccal is toxic at extremely low concentrations.

3) Hydrogen Peroxide - It is the intention of the hatchery manager to replace formalin with hydrogen peroxide, which is considered by the U.S. Food and Drug Administration as a low regulatory priority. According to various literature, hydrogen peroxide can be effective at a concentration of 250-500 mg/l. It decomposes into water and oxygen and the half-life in freshwater ranges from 8 hours to 20 days.

Cleaning Activities

Cleaning occurs in the cold water pools preferably once a week when fish are actively feeding. There are certain times of the year when cleaning on a routine basis is not required and is therefore not carried out to prevent excess stress on the fish. Cleaning occurs on an as needed basis from July - February because fish reduce their feed intake or stop feeding altogether on a natural cycle due to gonad maturation and the spawning season. Cleaning during this period may take place once every 2-4 weeks. Pools require cleaning on a more routine basis (weekly) from about March through June when most of the feeding and growth occurs.

Cleaning procedures involve not offering any feed on the day pools are to be cleaned. Water level is reduced in the pool so the fish culturist will be more mobile. Water flow in and out of the pools remain constant. Pool bottoms and walls are scrubbed with brushes made with plastic or stainless steel bristles. Water continually discharges to the drain lines. Usually one pool is cleaned at a time. The pools are allowed to flush before the water depth is increased to the normal level.

Chlorine is very seldom used on site, mostly for the disinfection of stocking trucks. Regardless, when it is used, it is neutralized with sodium thiosulfate.

VI. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Overview of Federal and State Regulations

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the Act (see 40 CFR 125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT), Best Conventional Control Technology (BCT) for conventional pollutants and Best Available Technology Economically Achievable (BAT) for toxic pollutants.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve federal or state water quality standards.

Under Section 301(b)(1)(C) of the Clean Water Act (CWA), discharges are subject to effluent limitations based on Water Quality Standards. The Massachusetts Surface Water Quality Standards include the requirements for the regulation and control of toxic constituents and also require that EPA criteria established pursuant to Section 304(a) of the CWA shall be used unless site specific criteria are established. The State will limit or prohibit

discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained.

The 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 caused, has reasonable potential to cause, or contributes to an excursion above any water quality criteria. An excursion occurs if the projected or actual instream concentrations exceed the applicable criteria. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the species to toxicity and, where appropriate, the dilution of the effluent in the receiving water.

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA. EPA's anti-backsliding provisions restrict the relaxation of permit limits, standards, and conditions. Therefore effluent limits in the reissued permit must be at least as stringent as those of the previous permit. Effluent limits based on BPJ, water quality, and state certification requirements must all meet the anti-backsliding provisions found under Section 402 (o) and 303 (d) (4) of the CWA, as described in 40 CFR 122.44 (1).

Water Quality Standards; Designated Use; Outfall 001

The Bungay River is classified as a Class B water, warm water fishery in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have consistently good aesthetic value.

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR 4.02) as waters in which the maximum mean monthly temperature generally exceeds 20° Celsius during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life.

Available Dilution

Water quality based limitations are established with the use of a calculated available dilution. Title 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for 7 consecutive days, recorded over a 10-year recurrence interval. Additionally, the facility design flow is used to calculate available effluent dilution.

In its 1997 Water Quality Assessment Report of the Ten Mile River Basin, MA DEP stated that there is no consistent discharge from Greenwood Lake, thus the effluent at times may dominate flow in the Bungay River. A site visit conducted by EPA staff on July 25, 2001 confirmed that flows in the river were limited or nearly absent. As such a dilution factor of one (1) will be used in this permit.

The 2002 Massachusetts List of Integrated Waters lists the Bungay River as "No Uses Assessed."

OUTFALL 001 - CONVENTIONAL POLLUTANTS

Biochemical Oxygen Demand (BOD₅) - The EPA has recently submitted effluent guidelines for this type of facility to the Federal Register for publication. The previous permit included BOD limitations, 5 mg/l average monthly and 10 mg/l for maximum daily, which were based on Best Professional Judgement (BPJ).

Due to anti-backsliding and anti-degradation concerns, these limits will be included in the draft permit and the monitoring frequency shall continue to be quarterly and monitoring is required to be conducted immediately following a raceway/tank cleaning and/or maintenance activities rather than during a random operating time during the month.

Total Suspended Solids (TSS) - The EPA has recently submitted effluent guidelines for this type of facility to the Federal Register for publication. The previous permit included TSS limitations, 5 mg/l average monthly and 10 mg/l for maximum daily, which were based on Best Professional Judgement (BPJ).

Due to anti-backsliding and anti-degradation concerns, these limits will be included in the draft permit and the monitoring frequency shall continue to be quarterly and monitoring is required to be conducted immediately following a raceway/tank cleaning and/or maintenance activities rather than during a random operating time during the month.

Dissolved Oxygen (DO) - The previous permit included a limit of 5.0 mg/l for DO based on state surface water quality standards. The monitoring for dissolved oxygen (DO) was to be conducted during the use of formalin, a chemical which is known to cause low DO conditions. However, the facility no longer uses formalin and recent DMRs show adequate concentrations of dissolved oxygen, therefore, the limit has been removed from the draft permit.

pH - The draft permit includes proposed pH limitations which are required by state water quality standards, and are at least as stringent as pH limitations set forth at 40 CFR 133.102(c). The pH level shall be in a range of 6.5 through 8.3 standard units and not more than 0.5 standard units outside of the normally occurring range. There shall be no change from background conditions that would impair any use assigned to this class.

However, based on information provided by the permittee, well water for the facility has a pH which is usually below 6.5 units. Well water measurements taken between February 15, 2000 and May 30, 2000 had a range of 5.69-5.90 with a mean of 5.78 units. In stream readings made on the same dates as above show a range of 6.05-6.86 with a mean of 6.47 units. Based on this information, the draft permit includes proposed pH limitations of 6.0 to 8.3 standard units and not more than 0.2 standard units outside the normally occurring range.

OUTFALL 001 - NONCONVENTIONAL AND TOXIC POLLUTANTS

Total Ammonia, as N - Ammonia is a nutrient which is toxic at elevated concentrations. Concentrated aquatic animal facilities are known contributors of ammonia. The previous permit included limits for ammonia, 24.1 mg/l daily maximum and 4.15 mg/l monthly average. Recent DMR data (all samples <0.10 mg/l) shows concentrations of ammonia far below the limits in the previous permit, therefore EPA has concluded there is no reasonable potential.

Current EPA water quality criteria for ammonia in freshwater systems are defined in the 1999 Update of Water Quality Criteria for Ammonia. At a pH of 7.0 and temperature of 20° Celsius, the acute criteria is 24.1 mg/l and the chronic criteria is 4.15 mg/l. Given the dilution factor of 1, the total ammonia limitations are 24.1 mg/l daily maximum and 4.15 mg/l monthly average.

Total Ammonia, as N Limitations

Acute (Daily Maximum)

24.1 mg/l (At pH 7.0 and temperature of 20° Celsius)

(acute criteria * dilution factor) = Acute (Daily Maximum)

(24.1 mg/l * 1) = 24.1 mg/l

Chronic (Monthly Average)

4.15 mg/l (At pH 7.0 and temperature of 20° Celsius)

(chronic criteria * dilution factor) = Chronic (Monthly Average)

(4.15 mg/l * 1) = 4.15 mg/l

Total Phosphorus - Review of effluent data from concentrated aquatic animal production facilities located in Massachusetts and New Hampshire, as well as, review of general NPDES permits developed for similar facilities in Idaho, Oregon and South Carolina indicate that such facilities have reasonable potential for discharging significant volumes of phosphorus. The previous permit included a “report only” requirement for total phosphorus. However, recent DMR data shows concentrations of total phosphorus are very low (0.08 mg/l and less), therefore, EPA has concluded there is no reasonable potential and the reporting requirement has been removed from the draft permit.

Total Residual Chlorine - The draft permit includes total residual chlorine limitations which are based on state water quality standards [Title 314 CMR 4.05 (5)(e)]. Chlorine compounds produced by the use of a chloride-based sanitizer can be extremely toxic to aquatic life. The water quality standards for chlorine defined in the 1998 EPA National Recommended Water Quality Criteria of freshwater are 19 ug/l daily maximum and 11 ug/l monthly average in the receiving water. Given a dilution factor of 1, the total residual chlorine limitations have been set at 19 ug/l daily maximum and 11 ug/l monthly average. Sampling frequency shall be quarterly during cleaning operations, when chlorine is being discharged. The chlorine wash water is neutralized with sodium thiosulfate prior to discharge.

Total Residual Chlorine, Freshwater, Limitations

Acute (Daily Maximum)

19 ug/l = 0.019 mg/l

(acute criterion * dilution factor) = Acute (Daily Maximum)

19 ug/l * 1 = 19 ug/l = 0.019 mg/l

Chronic (Average Monthly)

11 ug/l = 0.011 mg/l

$$\begin{aligned} (\text{chronic criterion} * \text{dilution factor}) &= \text{Chronic (Average Monthly)} \\ 11 \text{ ug/l} * 1 &= 11 \text{ ug/l} = 0.011 \text{ mg/l} \end{aligned}$$

Formaldehyde - Concentrated aquatic animal production facilities commonly use biocides. The most common of which is formalin products (Paracide-F, Formalin-F, or Parasite-S) which contains approximately 37 percent by weight formaldehyde gas. Formalin is used for the therapeutic treatment of fungal infections and external parasites of finfish and finfish eggs.

The previous permit included a limit for formaldehyde, however, the facility has eliminated use of formalin so the limit has been removed from the draft permit.

OUTFALL 001 - WHOLE EFFLUENT TOXICITY (WET)

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards include the following narrative statement and requires that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria: All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

Based on the potential for toxicity resulting from formaldehyde use, and in accordance with EPA national and regional policy, the previous permit included chronic and acute toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants," 50 Fed. Reg. 30,784 (July 24, 1985); see also, EPA's "Technical Support Document for Water Quality-Based Toxics Control," September 1991.) As previously stated, the facility has eliminated the use of formalin so the WET testing requirement has been removed from the draft permit.

VII. ANTI-BACKSLIDING

Anti-backsliding as defined at 40 CFR §122.44(l)(1) requires reissued permits to contain limitations as stringent or more stringent than those of the previous permit unless the circumstances allow application of one of the defined exceptions to this regulation. However, the limits for total ammonia, formaldehyde, dissolved oxygen and Whole Effluent Toxicity testing and the reporting requirement for total phosphorus have been removed from the draft permit based on new data and changes made since the issuance of previous permit period. All other limits are as stringent as the previous permit.

VIII. ANTI-DEGRADATION

The Massachusetts Anti-degradation Policy is found at Title 314 CMR 4.04. All existing uses of the Bungay River must be protected. This draft permit is being reissued with allowable discharge limits as stringent as the current permit. Please note the limits for total ammonia, formaldehyde, dissolved oxygen and Whole Effluent Toxicity testing and the reporting requirement for total phosphorus have been removed from the draft permit based on new data and changes made since the issuance of previous permit period. The public is invited to participate in the anti-degradation finding through the permit public notice procedure.

IX. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the MA DEP Commissioner.

X. STATE CERTIFICATION REQUIREMENTS

The staff of the Massachusetts Department of Environmental Protection ("MADEP") has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

XI. PUBLIC COMMENT PERIOD AND PROCEDURES FOR FINAL DECISION

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection, MA Unit, One Congress Street, Suite-1100, Boston, Massachusetts 02114. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. Public hearings may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates a 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's Boston office.

Following the close of the comment period and after a public hearing, if such a 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.

XII. EPA CONTACT

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

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November 19, 2004
Date

Linda M. Murphy, Director
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