

**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 PURSUANT TO  
THE CLEAN WATER ACT (CWA)**

**NPDES PERMIT NUMBER:** MA0005916

**PUBLIC NOTICE START AND END DATES:** July 25, 2007 – August 23, 2007

**NAME AND MAILING ADDRESS OF APPLICANT:**

Richard E. Galat, Facilities Manager  
Woods Hole Oceanographic Institution  
Smith Lab MS# 19  
Woods Hole, MA 02543

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Woods Hole Oceanographic Institution  
Environmental Systems Laboratory  
171 Oyster Pond Road  
Woods Hole, MA 02543

**RECEIVING WATER:** Vineyard Sound (Cape Cod Coastal Drainage Area, MA-96)

**RECEIVING WATER CLASSIFICATION:** Massachusetts Class SB

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**ATTACHMENTS**

**A. DMR Summary**

Figure 1. Map of the Facility, including outfall location

## 1. Proposed Action

The above named applicant has applied to the U. S. Environmental Protection Agency (EPA) for re-issuance of a National Pollutant Discharge Elimination System Permit to discharge fish rearing water into the designated receiving water. The previous permit was issued on September 17, 2001, and expired on September 17, 2006. EPA received the application for permit re-issuance on April 17, 2006. Since the application for permit re-issuance was considered timely and complete by EPA, the previous permit has been administratively continued until EPA takes action on the re-issuance.

## 2. Type of Facility

The Environmental Systems Laboratory is Woods Hole Oceanographic Institution's marine biology research wet laboratory. At present, it is used primarily to maintain captured native species that are studied for their various characteristics. It includes four ponds and eight raceways, as well as other aquaria and research equipment. Current annual production rates for marine species are as follows: Atlantic cod, 25 lb/yr; Scup, 50-100 lb/yr; Scallops, 10-20 lb/yr; Clams, 10-20 lb/yr; and Killifish, 5-10 lb/yr, for a total of 100 to 175 lb/yr.

Since this is a research laboratory, new projects which are totally different from current activities may be initiated during the term of this permit. The Laboratory indicated that when new research projects are selected, there is time before the initiation of the new project to modify the facility's NPDES permit as necessary to provide the required environmental protection.

## 3. Discharge Location and Description

Seawater is drawn from two offshore intakes in Vineyard Sound, filtered, heated or cooled (depending on the season), and distributed to various fish and marine organism tanks. Subsequently, after its use in culturing the fish and marine organisms, energy is recovered from the water. Then the wastewater is routed to a settling pond where detritus and sediment are settled before the effluent is returned to Vineyard Sound. The volume of intake water and discharged water is approximately 500 gallons per minute (0.72 million gallons per day). The intakes are 420 ft and 520 ft offshore. The discharge location is 220 ft offshore at a depth of 8.5 ft. Based on the permitted discharge flow (0.79 mgd) there is considerable dilution available at the point of discharge.

The effluent quality reported on Discharge Monitoring Report (DMR) forms is summarized in **Attachment A**. A map of the facility and discharge location is shown in **Figure 1**.

## 4. Receiving Water Description

Vineyard Sound at the point of discharge is designated as a Class SB water body by the Massachusetts Surface Water Quality Standards (314 CMR 4.06). Class SB waters are designated as a habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting with depuration (Restricted Shellfish Areas). These waters shall have consistently good aesthetic

value. [314 CMR 4.05(4)(b)]

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those water-bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of total maximum daily loads (TMDLs). Vineyard Sound is not included in the most recently EPA approved Massachusetts list of waters requiring the development of TMDLs (i.e., 303(d) list or Category 5 of the Massachusetts Year 2004 Integrated List of Waters) or on the Proposed 2006 CWA 303(d) List.

## **5. Permit Basis: Statutory and Regulatory Authority**

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement effluent limitations and other requirements, including monitoring and reporting, in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State statutes and regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

When establishing NPDES permit requirements, EPA is required to consider, and include limitations in the permit, based on the most stringent of the following concepts: (a) technology-based requirements, (b) water quality-based requirements, (c) anti-backsliding from the limitations and requirements in the current/existing permit, and (d) antidegradation requirements.

Technology-based requirements represent the minimum level of control that must be imposed under Sections 402 and 301 (b) of the CWA and implementing regulations at 40 CFR 125, 133, and 405 through 471. For publicly-owned treatment works (POTWs), technology-based requirements are effluent limitations based on secondary treatment requirements of Section 301(b)(1)(B) of the CWA as defined in 40 CFR 133.102. In situations where promulgated technology-based requirements are not applicable, Section 402(a)(1)(B) of the CWA provides that such limits be based on EPA's judgment. Such limits are referred to as "best professional judgment" (BPJ) limits, and are referenced in 40 CFR 125.3.

Water quality-based requirements are necessary where effluent limits more stringent than technology-based limits are necessary to maintain or achieve federal or state water quality standards. Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on federal or state water quality standards. The Massachusetts Surface Water Quality Standards (314 CMR 4.00) contain requirements for conventional and toxic pollutants in order to provide protection for designated uses in the receiving waters. Included in these Standards are provisions that EPA criteria for toxic pollutants, 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.

Anti-backsliding as defined in Section 402(o) of the CWA and implementing regulations at 40 CFR §122.44(l) require 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.

In accordance with regulations found at 40 CFR Section 131.12, each state must adopt a statewide antidegradation policy to maintain and protect existing in-stream water quality. The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04. No lowering of water quality is allowed, except in accordance with the antidegradation policy. This applies in situations where a lowering of water quality is being proposed, such as a new discharge or an increased discharge of pollutants at a facility with an existing permit.

## **6. Effluent Limitations and Monitoring Requirements in the Permit**

There are promulgated standards for technology-based effluent limits at "concentrated aquatic animal production facilities" which produce 100,000 pounds or more of aquatic animals per year (40 CFR 451). This facility's annual production is currently about 100 to 175 pounds per year, which falls far below the production rate which requires application of those standards. However, the terms and conditions of this permit are consistent with 40 CFR 451, which requires reporting on usage of fish-treatment drugs and damages to the fish containment system, along with development and implementation of a "best management practices (BMP) plan" for solids control, materials storage, structural maintenance, recordkeeping, and training. Effluent limits are to be based on EPA's best professional judgment (BPJ) of appropriate technology, state water quality standards, and anti-backsliding from the previous permit.

The state water quality standards for Class SB Waters were used as the basis for other effluent limitations in the permit.

The rationale for the permit requirements is as follows:

**Flow** – The draft permit proposes to carry forward the average monthly flow limit of 0.79 mgd from the current permit.

**pH** -- The limits, within the range of 6.5 through 8.5 std units, are based on the state water quality standards. Consistent with the standards, provision is made for pH values outside of the 6.5 to 8.5 range if due to natural causes.

**Temperature** – The draft permit proposes to carry forward the maximum daily temperature limit of 29.4° Celsius (85°F), from the current permit. This permit limit was derived based on attaining Massachusetts' water quality standards for Class SB waters. A review of the discharge monitoring temperature data indicate that the facility has fully complied with the current limits.

**Acute Whole Effluent Toxicity Testing** -- The limit of 100% is based on achieving the water quality standards for no unacceptable toxicity in the discharge. The draft permit proposes to increase the monitoring frequency of the testing from 1/year to quarterly (4/year) because of the nature of the facility to potentially conduct multiple research projects simultaneously. However, up to three quarterly acute Whole Effluent Toxicity tests may be suspended per year if there has been no change in the operational process that may effect the discharge or if there has been no

introduction of new chemical additives to the facility's culture water since the previous passing acute toxicity test ( $LC_{50} > 100\%$ ). At a minimum, at least one test shall be conducted per year during cleaning operations.

**Other Permit Requirements** -- In addition to these specific effluent limitations, the permit contains general limitations to comply with state water quality standards on such things as color, oil sheen, foam, floating or settleable solids, and non-specific toxic chemicals. Also, other general monitoring conditions are contained in the narrative requirements.

Medications and disease control chemicals are covered by a condition in the permit. This condition contains requirements to prevent improper usage and possible discharge of such substances, which may have toxic properties which could violate state water quality standards.

The permit contains a condition containing detailed requirements for preparing and carrying out "Best Management Practices" to prevent pollution from this fish and marine organism culture facility. This is a key component of the permit to insure compliance with both technology and water quality requirements.

The permit also contains a special condition which requires notification of EPA whenever a new research project is being initiated. This special notification requirement will allow EPA to make any needed modifications to the permit to protect the environment before new species or new chemicals are in use at the facility. This is particularly important to protect the receiving waters from aquatic invasive species or toxic pollutants which could be the subject of research at the facility.

## **7. 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 Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910 (a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for 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.

The Woods Hole Oceanographic Institution, Environmental Systems Laboratory, discharges into an area of Vineyard Sound which is designated by NMFS as EFH for the following species and applicable life stages:

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod ( <i>Gadus morhua</i> )				X
haddock ( <i>Melanogrammus aeglefinus</i> )			X	
pollock ( <i>Pollachius virens</i> )			X	
winter flounder ( <i>Pleuronectes americanus</i> )	X	X	X	X
windowpane flounder ( <i>Scophthalmus aquosus</i> )	X	X	X	X
bluefish ( <i>Pomatomus saltatrix</i> )				X
long finned squid ( <i>Loligo pealei</i> )	n/a	n/a	X	X
short finned squid ( <i>Illex illecebrosus</i> )	n/a	n/a		
Atlantic butterflyfish ( <i>Peprilus triacanthus</i> )	X	X	X	X
Atlantic mackerel ( <i>Scomber scombrus</i> )	X	X	X	X
summer flounder ( <i>Paralichthys dentatus</i> )	X	X	X	X
scup ( <i>Stenotomus chrysops</i> )	X	X	X	X
black sea bass ( <i>Centropristus striata</i> )	n/a	X	X	X
surf clam ( <i>Spisula solidissima</i> )	n/a	n/a	X	X
king mackerel ( <i>Scomberomorus cavalla</i> )	X	X	X	X
Spanish mackerel ( <i>Scomberomorus maculatus</i> )	X	X	X	X
cobia ( <i>Rachycentron canadum</i> )	X	X	X	X

EPA has concluded that the limits and conditions in the draft permit minimize adverse effects to EFH for the following reasons:

This is a small facility for raising and studying fish and other marine organisms, which discharges the seawater used for rearing the various organisms into Vineyard Sound. A new special condition is being placed in the permit to bolster the requirement to notify and obtain approval of EPA before beginning any rearing or testing using toxic chemicals, potential invasive species, or medications which might affect EFH.

The permit contains requirements to comply with all state water quality standards for protection of fish and fish habitat. These requirements will minimize adverse effects on EFH.

EPA believes that the draft permit limits and requirements adequately protect EFH for the managed species, and therefore additional mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for our conclusion, NMFS will be notified and an EFH consultation will be reinitiated.

## **8. Endangered Species Act**

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (“listed species”) and habitat of such species that has been designated as critical (a “critical habitat”). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species, where as the National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish.

As the federal agency charged with authorizing the discharge from this facility, EPA has reviewed available habitat information developed by the Services to see if one or more of the federal endangered or threatened species of fish, wildlife, or plants may be present within the influence of the discharge. Listed species in this general area are likely to include sea turtles and whales for NMFS.

EPA believes the authorized discharge from this facility is not likely to adversely affect any federally-listed species or their habitats. This preliminary determination is based on the location of the outfall, and the reasons provided in the EFH discussion (Section 7 of this Fact Sheet). EPA is seeking concurrence with this opinion from NOAA Fisheries through the informal consultation process. A copy of the Draft Permit and Fact Sheet has been provided to both USFWS and NMFS for review and comment.

## **9. Coastal Zone Management**

Section 307(c) of the Coastal Zone Management Act, 16 U.S.C. 1451 et seq. and implementing regulations (15 CFR part 930) prohibit EPA from issuing a permit for an activity affecting land or water use in the coastal zone until the applicant certifies that the proposed activity complies with the State Coastal Zone Management (CZM) program, and the State or its designated agency concurs with the certification (or the Secretary of Commerce overrides the State's nonconcurrence).

The discharge is within the defined coastal zone. The permittee submitted a letter dated April 11, 2007, to the Massachusetts Coastal Zone Management Program stating its intention to abide by the CZM water quality and habitat policies. The CZM Program shall review the draft permit, and it will only be issued after CZM concurrence with the applicant's certification.

## **10. State Certification Requirements**

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection (MassDEP) 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.

## **11. 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 Mark Voorhees, U.S. EPA, Office of Ecosystem Protection, 1 Congress Street, Suite 1100, 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 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 if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

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

## 12. EPA and State Contacts

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:

Mark Voorhees  
Office of Ecosystem Protection  
U.S.E.P.A. - Region 1  
One Congress Street, Suite 1100 (CIP)  
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Paul M. Hogan  
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627 Main Street  
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Date: \_\_\_\_\_

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

**WOODS HOLE OCEANOGRAPHIC INSTN**  
**NPDES Permit MA0005916**  
**DMR Summary**

**Pipe 1: Sea Water Discharge**

Date	# Meas./ Month	TEMP, WATER DEG. C			pH			FLOW	
		Min	Average	Max	Min	Average	Max	Average	Max
31-Mar-06		5.02	6.51	8.01	7.51	7.53	7.55	0.79	0.79
28-Feb-06		4.65	5.48	6.31				0.79	0.79
31-Jan-06		5.81	5.916	6.11				0.79	0.79
31-Dec-05			6.9	10.24	7.48		7.7	0.79	0.79
31-Oct-05			20.12						0.79
30-Sep-05			22.68		7.73		7.75		
31-Aug-05			23.3						0.79
31-Jul-05			20.08						0.79
30-Jun-05			15.95		7.73		7.95		0.79
31-May-05			13.74						0.79
30-Apr-05			9.24						0.79
31-Mar-05			4.86						0.79
31-Jan-05			5.3					0.79	0.79
31-Dec-04			7.2			7.9		0.79	0.79
30-Nov-04			10.64					0.79	0.79
31-Oct-04			14.19					0.79	
30-Sep-04			20.94			7.9		0.79	0.79
31-Aug-04			20.96					0.79	0.79
31-Jul-04			23					0.79	0.79
30-Jun-04			19.18			7.92		0.79	0.79
31-May-04			15.93					0.79	0.79
30-Apr-04			10					0.79	0.79
31-Mar-04			4.2			7.9		0.79	0.79
29-Feb-04			3.5					0.79	0.79
31-Jan-04			1.28					0.79	0.79
Min		4.65	-	-	7.48	-	-	-	-

Average		-	12.44	-	-	7.83	-	0.79	-
Max		-	-	10.24	-	-	7.95	-	0.79

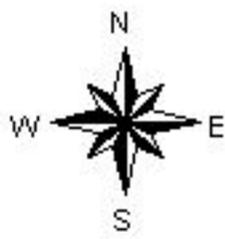
**FIGURE 1**



MASSACHUSETTS  
DEPARTMENT OF  
ENVIRONMENTAL  
PROTECTION

Data from Mass GIS & MA DEP.  
All Data Subject to Revision

**Woods Hole Oceanographic Institution  
Environmental Systems Laboratory  
Woods Hole, MA  
MA0005916**



*For Intra-Agency Policy Deliberations*

4/11/07, Massachusetts DEP