

**MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT  
MAINE WASTE DISCHARGE LICENSE**

**FACT SHEET**

DATE: **DECEMBER 2, 2013**

REVISED: **MARCH 21, 2014**

GENERAL PERMIT NUMBER: **#MEG130000**

WASTE DISCHARGE LICENSE: **#W009020-6H-D-R**

**NET PEN AQUACULTURE  
GENERAL PERMIT  
issued by  
MAINE DEPARTMENT OF  
ENVIRONMENTAL PROTECTION**

AREA OF COVERAGE AND RECEIVING WATER CLASSIFICATION:

**CLASS SB OR SC MARINE WATERS EAST OF NASKEAG POINT IN BROOKLIN,  
EXCEPT THOSE WATERS IN THE AREA NORTH OF A LINE FROM SCHOODIC  
POINT IN WINTER HARBOR TO BAKER ISLAND IN CRANBERRY ISLES, THEN  
WEST TO NASKEAG POINT IN  
BROOKLIN, MAINE**

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## 1. PROCEDURAL AND REGULATORY SUMMARY

On January 12, 2001, the Maine Department of Environmental Protection (Department) received authorization from the U.S. Environmental Protection Agency (USEPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine. The Department administers the program as the Maine Pollutant Discharge Elimination System (MEPDES) permit program. This General Permit has been assigned MEPDES # MEG130000.

On August 23, 2004, the USEPA promulgated effluent guideline limitations (EGLs) for *Concentrated Aquatic Animal Production Point Source Category* at 40 CFR Part 451. 40 CFR Part 451 Subpart B, *Net Pen Subcategory*, is applicable to discharges from net pen aquaculture facilities that produce 100,000 pounds or more per year of aquatic animals, and 40 CFR Part 451.21 establishes effluent limitations attainable by the application of the best practicable control technology currently available (BPT). Conditions established in this General Permit incorporate these BPT requirements.

On September 22, 2008, the Department issued a General Permit for the discharge of certain pollutants resulting from the operation and maintenance of Atlantic salmon aquaculture facilities located in Class SB or SC waters east of Naskeag Point in Brooklin, except those waters in the area north of a line from Schoodic Point in Winter Harbor to Baker Island in Cranberry Isles, then west to Naskeag Point in Brooklin, Maine. The September 22, 2008 General Permit was issued for a five-year term and superseded the initial MEPDES permit issued by the Maine Board of Environmental Protection on June 19, 2003.

On March 2, 2011, the Department issued WDL Modification #W009020-6H-C-M thereby modifying the September 22, 2008 General Permit to revise sediment and benthic monitoring requirements and associated warning level and impact limit thresholds based on new information that was not available at the time the General Permit was issued, and to correct minor technical mistakes.

Between September 24-27, 2013, the Department provided public notice of its intent to renew the September 22, 2008 General Permit in Bangor Daily, Kennebec Journal, Sun-Journal, and Portland Press Herald newspapers. The notice solicited comments on a draft permit, when available, and provided an opportunity to request a public hearing. The Department commenced renewal proceedings on December 22, 2011 by way of electronic mail from Permitting to Department staff and staff of the Maine Department of Marine Resources soliciting comments and suggestions to be considered during the 2013 general permit renewal process.

## 2. PERMIT SUMMARY

The Department is making the following significant changes, or is carrying forward previously established terms and conditions of the September 22, 2008 General Permit and March 2, 2011 General Permit Modification. This is a general summary not intended to identify all changes made to the previous permits.

## 2. PERMIT SUMMARY (cont'd)

1. Expanding applicability from only Atlantic salmon to all finfish species that may legally be cultivated in net pens in Maine.
2. Carrying forward exclusions on area of coverage, current velocity and stratification.
3. Carrying forward the 30-meter mixing zone.
4. Eliminating video/photographic monitoring and reporting requirements.
5. Restructuring and revising sediment and benthic monitoring requirements and limitations within and outside the sediment mixing zone based on new information that relies on Shannon-Wiener Diversity Index, total abundance composed of *Capitella capitata* and sulfide.
6. Eliminating the requirement to maintain reference sites based on the revised sediment and benthic monitoring structure.
7. Establishing a requirement to demonstrate compliance with sulfide standards prior to restocking a facility that exceeded a General Permit limitation.
8. Carrying forward conditions for protection of Atlantic salmon.
9. Restructuring several components of the previous General Permit under a new condition entitled, Best Practicable Treatment, for consistency with federal requirements and improved organization.
10. Carrying forward terms and conditions for use of drugs for disease control.
11. Establishing a requirement to maintain a current comprehensive operations and maintenance plan for each facility.

## 3. HISTORY

This section provides a summary of significant historical events related to the General Permit.

Historically, the USEPA did not issue NPDES permits for finfish aquaculture facilities in Maine.

Enacted in 1987, 38 M.R.S.A. § 413(2-F) exempted aquaculture facilities from the need to obtain a Maine Waste Discharge License. The law did require that the Department certify to the Maine Department of Marine Resources (MeDMR) that a proposed aquaculture facility would not have a significant adverse effect on water quality before a lease could be issued.

### 3. HISTORY (cont'd)

In 1998, a new subsection (10) was added to 38 M.R.S.A. § 413 requiring discharge licenses for aquaculture activities after the State received authorization from the USEPA to administer the NPDES program.

In November 1999, the State applied to the USEPA for authorization to administer the NPDES program in Maine. Included in the application was a Memorandum of Agreement (MOA) between the Department and USEPA, Region I (subsequently revised in April 2000). Section III (10) of the MOA specifically addresses the permitting of aquaculture facilities and recognizes the Department's need to take appropriate action in MEPDES permits to protect the Atlantic salmon as an endangered species under Federal law.

On November 19, 1999, a Gulf of Maine distinct population of Atlantic salmon was listed as an endangered species. 64 Federal Register 62627.

In July 2000, citizens' groups filed suit under Federal law against three large Maine finfish aquaculture operators for violation of the Clean Water Act by discharging without a NPDES permit.

On January 12, 2001, the Department received authorization from the USEPA to administer the NPDES permit program in Maine.

On February 2, 2002, the USEPA issued a NPDES permit for Acadia Aquaculture, a proposed new finfish aquaculture facility in Blue Hill Bay.

On July 2002, a proposed consent decree in settlement of the citizen lawsuit with one of the three companies was accepted by the Federal District Court.

On September 19, 2002, following the preparation of a preliminary draft permit by Department staff, the Board of Environmental Protection (Board) voted to assume jurisdiction of the General Permit and ordered that a public hearing be held. At a meeting on January 2, 2003, the Board posted the proposed General Permit to public hearing, and public notices of the hearings were published on January 7<sup>th</sup>, 16<sup>th</sup>, and 29<sup>th</sup> of 2003. On February 6, 2003, a public hearing was conducted in Machias for the purpose of receiving oral testimony from the general public. The public hearing continued on February 11 and 12, 2003 in Bangor for the purpose of receiving oral testimony from the intervenor parties and their witnesses. A revised version of the proposed draft General Permit was circulated to interested persons on May 9, 2003, with the comment period closing on June 4, 2003.

On June 19, 2003, the Board issued a final Atlantic Salmon Aquaculture General Permit for a five-year term.

April 22, 2008 – The Department published notice of intent to renew the June 19, 2003 General Permit.

### 3. HISTORY (cont'd)

April 28, 2008 – The Department issued a proposed draft permit for a 30-day review and comment period. As a result of public comments, internal and inter-agency discussions, the Department identified several significant changes to the April 28, 2008 draft permit. Consequently, on August 12, 2008, the Department issued a revised draft permit for a 14-day review and comment period to all parties who received the formal 30-day draft permit.

September 22, 2008 – The Department issued MEPDES permit #MEG130000 for a five year term thereby reviewing the General Permit issued on June 19, 2003.

September 24-27, 2013 – The Department provided public notice of its intent to renew the September 22, 2008 General Permit in the Bangor Daily, Kennebec Journal, Sun-Journal, and Portland Press Herald newspapers.

December 2, 2013 – The Department issued a draft General Permit for public comment.

### 4. DESCRIPTION OF PERMITTED ACTIVITIES

Net pen aquaculture activities are conducted by placing fish in a system of one or more free-floating net pens moored in the open ocean. Most fish are introduced as juveniles and raised to adult size for harvest as a commercial food source. Some fish may be maintained as brood stock. The fish are grown or maintained by adding fish food and, as necessary, medications to the water. The previous aquaculture general permits authorized only one species of fish to be reared at approved facilities – Atlantic salmon (*Salmo salar*) of North American origin. This renewed General Permit, however, is not limiting coverage to Atlantic salmon based on a determination that the type of discharge from a net pen facility and the methods by which the Department regulates is not species-dependent. The majority of discharges from a facility are expected to come from fish excrement and unconsumed feed. The discharges increase significantly during the months of August, September and October when the fish are growing more rapidly in response to increased feeding and optimum growing conditions. Medications may be used to combat infectious disease or parasites. The US Food and Drug Administration (USFDA) grants approval for specific uses of medications, although a veterinarian may prescribe an approved drug for a use or rate not described on its approved label. Additionally, the USFDA may authorize the use of Investigational New Animal Drugs (INAD) and aquaculture facilities may wish to use such medications as part of studies of their effectiveness. Other discharges incidental to the operation of an aquaculture facility include fish scales, disinfectants used to prevent the spread of disease, marine growth removed from nets and anti-fouling agents used to treat nets.

There are approximately 25 current finfish aquaculture leases issued by the Maine Department of Marine Resources (MeDMR). Of these, 23 are presently or have recently been in active use. The statewide total leased acreage is approximately 580 acres. The individual leases range in size from less than 5 acres to 45 acres. In most instances, however, only a small portion (about 10-15%) of the leased area is actually covered by net pens. In terms of net pens, the active facilities range from 6 to 25 pens with a circumference of 100 meters each, although if smaller pens are used the number of pens can be higher. The pens

#### **4. DESCRIPTION OF PERMITTED ACTIVITIES (cont'd)**

typically cover between 1 and 5 acres per site. The maximum number of fish contained per facility ranges from 61,000 to over 1,000,000 fish.

The location of net pen aquaculture facilities is important to both their success in rearing fish and minimizing environmental impacts. Typically, the facility owners seek locations having adequate tidal flushing, water depths, temperatures and dissolved oxygen concentrations to optimize fish growth. Facilities must also be placed to avoid conflicts with other marine uses such as public access, fishing and navigation. Further, facility operators are concerned with placing net pens in areas that have very low wintertime water temperatures, damaging ice floes or are subject to high wind or seas.

#### **5. AREA OF COVERAGE/SITING CRITERIA**

This General Permit limits coverage to those facilities located in Class SB or SC marine waters east of Naskeag Point in Brooklin, except those waters in the area north of a line from Schoodic Point in Winter Harbor to Baker Island in Cranberry Isles, then west to Naskeag Point in Brooklin, Maine. This area of coverage, which is identical to the area defined in the two previous aquaculture General Permits, has been selected because any potential adverse impact on ambient water quality from net pen aquaculture facilities operated in compliance with this General Permit are anticipated to be minimal. The tidal flushing and volume of water exchange is great and the natural input of nutrients from the Gulf of Maine is large in comparison to the loading from a properly operated facility. Many of the existing facilities are located in this area. The Department has chosen to exclude from the area of coverage the Blue Hill Bay and Frenchman's Bay regions, since these areas have less tidal flushing and nutrient loadings are a relatively greater concern. However, exclusion from General Permit coverage does not categorically make these areas unsuitable for finfish aquaculture, and individual permits may still be issued. Similarly, facilities locating in the waters of the State west of the coverage area may be permitted with individual permits.

The direct discharge of pollutants to Class SA waters is prohibited by *Standards for classification of estuarine and marine waters*, 38 M.R.S.A. § 465-B(1)(c); thus, Class SA waters within the geographic area of coverage are excluded.

The General Permit is carrying forward from an average current velocity siting requirement below net pens of 5 cm per second, except near the times of slack tide. This minimum current velocity criterion is intended to ensure that a sufficient current is available to provide adequate mixing of pollutants leaving the net pens. The criterion is based on Department best professional judgment in consideration of related siting criteria utilized in other jurisdictions and significant debate and discussion at public hearings before the Board of Environmental Protection.

## 5. AREA OF COVERAGE/SITING CRITERIA (cont'd)

Requirements of the MeDMR and US Army Corps of Engineers also affect the location and operation of aquaculture facilities. The General Permit requires that facilities demonstrate they have obtained or will obtain these permits in order to assure facilities will not impair narrative water quality criteria such as fishing, navigation and public uses of adjoining waters.

## 6. ADMINISTRATIVE REQUIREMENTS

The General Permit's administrative procedures and requirements are drawn from 06-096 CMR 2, 06-096 CMR 529 and applicable Maine laws. Individuals seeking coverage under this General Permit must file a Notice of Intent (NOI) containing sufficient information and facts as to allow the Department to determine if the proposed facilities are anticipated to comply with the General Permit terms and conditions. Pursuant to 06-096 CMR 2, within 30 days prior to filing the NOI with the Department, an applicant for coverage under this General Permit is required to give public notice of its intent to submit a NOI to the Department, and an original or photocopy of the public notice must be submitted to the Department with the NOI.

Once a completed NOI is received, the Department has a maximum of 30 days in which to act on it. If no other action is taken within that 30-day period, the NOI is considered approved on the 31st day following the Department's receipt of the NOI.

The term of this General Permit is five years. Coverage under this General Permit will be continued from year to year through payment of an applicable annual fee pursuant to *Maine Environmental Protection Fund*, 38 M.R.S.A. § 353-B, provided there are no changes in the facility or its operation as described in the NOI. Prior to expiration of this General Permit, the Department shall make a determination if it is to be renewed, and, if so, will commence renewal proceedings. If the General Permit is to be renewed, it shall remain in force until the Department takes final action on the renewal. Upon reissuance of a renewal General Permit, persons wishing to continue coverage must apply for coverage under the renewal General Permit not later than 30 days following the effective date of the renewal General Permit.

## 7. CONDITIONS OF PERMIT

*Conditions of licenses*, 38 M.R.S.A. § 414-A, requires that the effluent limitations prescribed for discharges, including, but not limited to, effluent toxicity, require application of best practicable treatment (BPT), be consistent with the U.S. Clean Water Act, and ensure that the receiving waters attain the State water quality standards as described in Maine's Surface Water Classification System. In addition, 38 M.R.S.A., § 420 and 06-096 CMR 530 require the regulation of toxic substances not to exceed levels set forth in *Surface Water Quality Criteria for Toxic Pollutants*, 06-096 CMR 584 (effective July 29, 2012), and that ensure safe levels for the discharge of toxic pollutants such that existing and designated uses of surface waters are maintained and protected.

## 8. RECEIVING WATER QUALITY STANDARDS

The State's water quality standards establish water quality objectives for all State waters by: (1) designating uses and related characteristics of those uses for each class of water, and (2) prescribing water quality criteria necessary to protect those uses and related characteristics. In addition, the State's antidegradation policy protects and maintains certain existing uses.

The applicability of this General Permit is restricted to discharges to certain estuarine or marine waters of the State classified as SB or SC pursuant to *Classifications of estuarine and marine waters*, 38 M.R.S.A. § 469 and that meet the standards of their ascribed classification, or where not, only if the discharge does not cause or contribute to the failure of the water body to meet the standards of classification. *Standards for classification of estuarine and marine waters*, 38 M.R.S.A. § 465-B(2) and (3) describe the standards for Class SB and Class SC waters, respectively.

Relevant standards for Class SB and SC waters:

- Designated Uses. Class SB waters must be of such quality that they are suitable for the designated uses of recreation in and on the water, fishing, aquaculture, propagation and harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation, navigation and as habitat for fish and other estuarine and marine life. The habitat must be characterized as unimpaired.
- Water Quality Criteria. The dissolved oxygen content of Class SB waters must be not less than 85% of saturation. Between May 15th and September 30th, the numbers of enterococcus bacteria of human and domestic animal origin in these waters may not exceed a geometric mean of 8 per 100 milliliters or an instantaneous level of 54 per 100 milliliters. The numbers of total coliform bacteria or other specified indicator organisms in samples representative of the waters in shellfish harvesting areas may not exceed the criteria recommended under the National Shellfish Sanitation Program, United States Food and Drug Administration.

Discharges to Class SB waters may not cause adverse impact to estuarine and marine life in that the receiving waters must be of sufficient quality to support all estuarine and marine species indigenous to the receiving water without detrimental changes in the resident biological community<sup>1</sup>. There may be no new discharge to Class SB waters that would cause closure of open shellfish areas by the Maine Department of Marine Resources.

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<sup>1</sup> "Without detrimental changes in the resident biological community" is defined as "no significant loss of species or excessive dominance by any species or group of species attributable to human activity." 38 M.R.S.A. § 466(12). The term "indigenous" means "supported in a reach of water or known to have been supported according to historical records compiled by State and Federal agencies or published scientific literature." 38 M.R.S.A. § 466(8).



## 8. RECEIVING WATER QUALITY STANDARDS (cont'd)

- Designated Uses. Class SC waters must be of such quality that they are suitable for recreation in and on the water, fishing, aquaculture, propagation and restricted harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation, navigation and as a habitat for fish and other estuarine and marine life.
- Water Quality Criteria. The dissolved oxygen content of Class SC waters must be not less than 70% of saturation. Between May 15th and September 30th, the numbers of enterococcus bacteria of human and domestic animal origin in these waters may not exceed a geometric mean of 14 per 100 milliliters or an instantaneous level of 94 per 100 milliliters. The numbers of total coliform bacteria or other specified indicator organisms in samples representative of the waters in restricted shellfish harvesting areas may not exceed the criteria recommended under the National Shellfish Sanitation Program, United States Food and Drug Administration.

Discharges to Class SC waters may cause some changes to estuarine and marine life provided that the receiving waters are of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community.

- Antidegradation Policy. State waters are protected by the State's antidegradation policy which provides that certain existing in-stream water uses and the level of water quality necessary to protect those existing uses must be maintained and protected. 38 M.R.S.A. § 464(4)(F).

## 9. RECEIVING WATER QUALITY CONDITIONS

This General Permit allows discharges only in locations where properly managed facilities are not anticipated to cause or contribute to violation of receiving water classification standards. There are only limited general monitoring data for marine waters in the area of coverage. In general, the Department has not identified any significant areas of concern that would indicate non-attainment of classification standards. Dissolved oxygen saturation has been observed to fall below minimum standards in limited areas and times in the summer. These conditions are often attributable to natural conditions such as thermal stratification. Facilities covered by this General Permit must not be located in waters that demonstrate significant, persistent vertical stratification during summer months. While several areas are closed to shellfishing due to bacterial contamination, this does not bear on finfish aquaculture operations since they are not a source of bacteria of human and domestic animal origin. Limited information regarding the presence of toxic substances (for example, PCBs, PAHs, metals, etc.) indicates these are most likely to occur in locations in proximity to higher population densities or industrial uses. Such activities are less prevalent in those regions of the State covered by this General Permit. Adverse benthic impacts may occur on the sea floor beneath facilities. A mixing zone has been established to limit impacts from accumulations of excess feed and/or fecal matter. The General Permit covers net pen

## 9. RECEIVING WATER QUALITY CONDITIONS (cont'd)

aquaculture facilities operated in the marine waters of the State classified as SB or SC that are in compliance with the standards of their ascribed classifications.

## 10. MIXING ZONES

Pursuant to *Enforcement generally*, 38 M.R.S.A. § 451, the Department may establish a mixing zone for any discharge at the time of application for a waste discharge license. The law states, in part,

The purpose of a mixing zone is to allow a reasonable opportunity for dilution, diffusion or mixture of pollutants with the receiving waters before the receiving waters below or surrounding a discharge will be tested for classification violations. In determining the extent of any mixing zone to be established under this section, the department may require from the applicant testimony concerning the nature and rate of the discharge; the nature and rate of existing discharges to the waterway; the size of the waterway and the rate of flow therein; any relevant seasonal, climatic, tidal and natural variations in such size, flow, nature and rate; the uses of the waterways in the vicinity of the discharge, and such other and further evidence as in the department's judgment will enable it to establish a reasonable mixing zone for such discharge. An order establishing a mixing zone may provide that the extent thereof varies in order to take into account seasonal, climatic, tidal and natural variations in the size and flow of, and the nature and rate of, discharges to the waterway.

This General Permit is carrying forward from the June 19, 2003 General Permit a mixing zone for the sea floor beneath and adjacent to each net pen facility. The mixing zone established in this General Permit includes the area within and beneath the net pen system and extends thirty (30) meters beyond the edge of the outermost net pens in all directions. Compliance monitoring associated with this General Permit will be conducted at sampling locations that are 35 meters beyond the edge of the outermost net pens.

Within the mixing zone, the General Permit allows some changes in fauna and physical characteristics of the sediment, but does not contemplate unlimited changes or the loss of all types of organisms. The previous General Permits established numeric "impact limitations" for sulfide, benthic infauna and *Beggiatoa* within the designated mixing zone. However, the law clearly identifies that the "*purpose of a mixing zone is to allow a reasonable opportunity for dilution, diffusion or mixture of pollutants with the receiving waters before the receiving waters below or surrounding a discharge will be tested for classification violations.*" (Emphasis added.) In its Response to Comments associated with the June 19, 2003 General Permit, the Board of Environmental Protection stated, "*While some lowering of normal standards is allowed within that area, [mixing zones] do not permit unchecked degradation, nor are the waters rendered unsuitable to support any uses.*" Response to Comments at 31.

## 10. MIXING ZONES (cont'd)

In this permitting action the Department concludes that requiring compliance with water quality-based numeric permit limitations within the mixing zone is inconsistent with the intent and purpose of a mixing zone and the governing statute. The intent of creating a mixing zone for net pen aquaculture was to allow a reasonable opportunity for diffusion of pollutants while avoiding unchecked degradation of benthic conditions. To ensure operation of a facility does not result in unchecked, long-term impacts to the sea floor and that between grow-out cycles benthic conditions are capable of supporting all estuarine and marine species indigenous to the receiving water without detrimental changes in the resident biological community in Class SB waters and that maintains the structure and function of the resident biological community in Class SC waters, the Department is making a best professional judgment determination that establishing a requirement for the permittee to demonstrate that sulfide levels within the mixing zone are equal to or less than 1,500 uM following exceedance of a sediment and benthic limit established in Table H.2. of the General Permit for Shannon-Wiener Diversity Index, *Capitella capitata* or sulfide. The permittee may not restock the facility with fish until sulfide levels within the mixing zone are equal to or less than 1,500 uM, a threshold, above which, is considered by the Department and supported by scientific literature<sup>2</sup> as a reasonable threshold for conditions that may not be capable of meeting narrative water quality standards for indigenous or resident estuarine and marine species.

The Department believes this regulatory approach strongly encourages the permittee to operate and manage the net pen facility for optimal environmental results so as to avoid delays in restocking the site due to permit violations beyond the mixing zone. In addition, the Department believes eliminating permit limitations within the mixing zone in favor of a restocking threshold is consistent with the intent of the original General Permit and the concept of a mixing zone.

## 11. DISCHARGE LIMITATIONS & CONTROLS

*Concentrated Aquatic Animal Production Point Source Category* at 40 CFR Part 451 Subpart B, *Net Pen Subcategory*, is applicable to discharges from net pen aquaculture facilities that produce 100,000 pounds or more per year of aquatic animals. It is noted that a facility which produces less than 100,000 pounds per year of aquatic animals and that seeks coverage under this General Permit will be subject to the minimum requirements of 40 CFR Part 451 incorporated herein.

40 CFR Part 451.21, *Effluent limitations attainable by the application of the best practicable control technology currently available (BPT)*, states that existing point sources provide BPT. The General Permit contains a condition that incorporates all BPT requirements of the code, including: feed management; waste collection and disposal; transport and harvest discharges; carcass removal; materials storage; maintenance; recordkeeping; and training.

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<sup>2</sup> Hargrave, B. T. (2010) "Empirical relationships describing benthic impacts of salmon aquaculture." *Aquaculture Environment Interactions*. Vol. 1: Pp 33-46.

## 11. DISCHARGE LIMITATIONS & CONTROLS (cont'd)

The new source performance standards (NSPS) for this subcategory are the same as the limitations specified in 40 CFR Part 451.21.

The General Permit requires that facilities utilize real-time control methods to monitor the amount of uneaten feed lost from the net pens. The most commonly used method is installation of video cameras in the water to observe feed falling through the water column. The amount of feed used at any given time varies on a number of factors, including fish size, water temperature, husbandry objectives, tidal action and observations of fish feeding activity.

Based on its obligations as a delegated State to administer the NPDES permitting program, the General Permit is carrying forward conditions for protection of Atlantic salmon requested by the National Marine Fisheries Service and U.S. Fish and Wildlife Service (collectively, the Services) and terms and conditions for the use of drugs in accordance with U.S. Food and Drug Administration rules and regulations.

Net pen aquaculture is unlike most conventional wastewater treatment facilities in that analytical measurements of wastewater quality from a discrete conduit cannot be collected. Rather, discharges from net pen facilities are controlled through imposition of citing criteria, best management practices, real-time feeding observations and establishing limitations on the amount of adverse impact that may occur outside the mixing zone. In this permitting action, the Department's objective is to reduce or eliminate subjectivity associated with compliance evaluations. Key points regarding permit and water quality compliance include the following.

- a. Applicability and scope of permit. The Department may issue a general permit authorizing the discharge of certain pollutants from multiple individual discharge sources and locations which all have the same type of discharges and which involve situations where the Department determines there is a relatively low risk for significant environmental impact. The applicability and scope of this General Permit has been broadened to include all aquatic animals that could potentially be farm raised in net pens in Maine, such as cod and Atlantic salmon, where the Department would otherwise apply identical terms and conditions in individual MEPDES permits. All eligibility standards established in the General Permit apply.
- b. Video monitoring. The previous General Permit required the permittee to conduct video or photographic monitoring of the sea floor under and adjacent to each net pen system to identify potential water quality or sediment impacts caused by the operation of the facility. This requirement was initially established in the June 19, 2003 Board Order and was generally thought that it would serve as a useful compliance tool for regulatory purposes. Since 2003, the video records have been proven to result in highly subjective determinations of permit compliance and interpretation, and have utilized a disproportionate amount of staff resources when compared to compliance evaluations made for other categories of discharges in Maine. Although the Department believes video surveys are a useful tool for operations and facility control purposes, it does not

## 11. DISCHARGE LIMITATIONS & CONTROLS (cont'd)

believe subjective interpretation of observed conditions on varying quality video records under highly variable oceanic conditions is an appropriate regulatory tool for permit compliance demonstration purposes. Many facility operators will continue to utilize photo surveys to assist in optimal management of the facility; however, this permitting action eliminates the requirement to conduct video surveys for permit compliance demonstration purposes. Consequently, permit limitations for *Beggiatoa* coverage have been eliminated as this was assessed based on visual interpretation of video records and historically an extremely difficult metric to accurately assess for both the permittees and Department compliance staff.

- c. Monitoring structure. The sediment and benthic monitoring structure of the new General Permit has been revised based on years of experience administering this regulatory mechanism and an improved approach of to achieve the two main objectives of permitting: 1) that the discharge receives best practicable treatment; and 2) that the discharge does not cause or contribute to non-attainment of water quality standards outside any mixing zone. The previous General Permit required mandatory benthic infauna sample collection and analysis regardless of site condition status determined through video surveys and sulfide monitoring. This resulted in many expensive benthic monitoring surveys being conducted at sites with very low or no measurable impact to the benthic community. This permitting action revises the default monitoring scheme by establishing a three-tiered approach. The permittee must conduct Screening Monitoring outside the mixing zone when fish are at the maximum biomass. If the mean sulfide result is  $> 750 \mu\text{M}$ , the permittee must then conduct Exceedance Monitoring outside the mixing zone for benthic infauna to obtain results for Shannon Wiener diversity index and percent *Capitella capitata*. The third tier is restocking monitoring within the mixing zone if the permittee exceeds an Exceedance Limit for Shannon Wiener diversity index, percent *Capitella capitata*, or sulfide. Fish may only be restocked if the sulfide level within the mixing zone is less than  $1,500 \mu\text{M}$ , and the permittee provides a restocking plan for approval. This monitoring structure achieves three objectives: 1) it requires and promotes careful operation and maintenance of the facility by the permittee to ensure compliance with permit limitations when samples are collected at the end of a fish grow-out cycle so as to avoid more costly and intensive benthic infauna sampling and delays in restocking; 2) it establishes a clear, consistent and objective method for evaluating compliance with the General Permit; and 3) when there is impact beyond the mixing zone, it requires that the permittee demonstrate that benthic conditions within the mixing zone have recovered to levels that are considered normal to avoid cumulative, long-term impacts within the mixing zone.
- d. Mixing zone. The previous General Permit included numeric limitations within the designated mixing zone for sulfide, *Beggiatoa* coverage and benthic infauna. As stated above, the Department concludes that requiring compliance with water quality-based numeric permit limitations within the mixing zone is inconsistent with the intent and purpose of a mixing zone and the governing statute. The intent of creating a mixing zone for net pen aquaculture was to allow a reasonable opportunity for diffusion of pollutants

## 11. DISCHARGE LIMITATIONS & CONTROLS (cont'd)

while avoiding unchecked degradation of benthic conditions. The Department has shifted its approach in this General Permit by establishing an action level for sulfide of  $> 750 \mu\text{M}$  within the mixing zone. When a permittee exceeds one or more numeric Exceedance Monitoring limitations established in the General Permit, fish may not be restocked at that site until the permittee demonstrates that the sulfide levels are below  $750 \mu\text{M}$  and may only be restocked in accordance with an approved restocking plan. The Department believes this approach adequately provides for a reasonable opportunity for diffusion of pollutants while avoiding unchecked degradation of benthic conditions.

- e. Sulfide. The previous General Permit established an exceedance limitation for sulfide of  $>3,000 \mu\text{M}$  outside the mixing zone. The standard was applied to the mean sulfide result from any sampling station. The exact value that should be used as the sulfide impact threshold has been debated since inception of the General Permit. The Department is revising the sulfide limitation to  $\geq 1,500 \mu\text{M}$  based on new information<sup>3</sup> that sulfide levels above this threshold correlate with benthic conditions that are transitioning toward polluted and may not be capable of meeting narrative water quality standards for indigenous or resident estuarine and marine species. The Department's concern with the previous limitation of  $3,000 \mu\text{M}$  beyond the mixing zone is that the benthic conditions are already polluted at that point with unreasonable impacts likely occurring. Thus, the water quality standards for indigenous and resident species may not have been met well before sulfide levels reach the  $3,000 \mu\text{M}$  level.

The Department filtered net pen aquaculture permit compliance data from 2009-2012 to determine whether the  $3,000 \mu\text{M}$  limitation captured all sites that experienced benthic impacts. The Department concluded that several sites with other environmental indicators, such as percent *Capitella capitata*, at the exceedance level had sulfide results below  $3,000 \mu\text{M}$ . This supports revising the exceedance limitation for sulfide outside the mixing zone to  $1,500 \mu\text{M}$ . The Department is revising the method by which this standard is applied. The previous General Permit applied the sulfide standard to the mean of all replicates from each sampling station. This General Permit is applying the sulfide standard to all samples taken across a facility due to the variability of sampling and oceanographic conditions. The Department believes it is appropriate to use site average rather than sampling station average to since the determination of compliance is applied to the entire site, not just a sampling station.

- f. Capitella capitata. The previous General Permit established standards for abundance of *C. capitata* ( $>25\%$  total abundance for Class SB waters and  $>50\%$  abundance for Class SC waters) as the limitation above which this pollution-tolerant species is considered to represent too high a percentage of the total abundance to meet applicable water quality criteria for indigenous and resident species. There are no significant changes to this metric, except that the standard is based on site average rather than sample station average.

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<sup>3</sup> Hargrave, B. T. (2010) "Empirical relationships describing benthic impacts of salmon aquaculture." Aquaculture Environment Interactions. Vol. 1: Pp 33-46.

## 11. DISCHARGE LIMITATIONS & CONTROLS (cont'd)

- g. Shannon-Wiener Diversity Index. The March 2, 2011 General Permit Modification established reporting requirements for Shannon-Wiener Diversity Index, which was a modification of the September 22, 2008 General Permit which established numeric limitations (as a percent reduction from reference site) for this metric. New information regarding Shannon-Wiener Diversity Index values at reference sites suggests that natural diversity in the area where this General Permit applies is approximately 0.5. The Department has made a correlation of this diversity value with net pen facilities that have experienced benthic impacts in the past. Therefore, this permitting action is establishing limitations of <0.5 for Class SB waters and <0.4 for Class SC waters.

## 12. DISCHARGE IMPACT ON RECEIVING WATER QUALITY

Net pen aquaculture facilities can cause changes in the immediate area of the net pens. Some deposition of material, primarily uneaten feed, on the sea floor directly beneath and adjacent to net pens can be expected and has been documented through compliance monitoring. The General Permit makes provisions for some adverse impacts within the benthic mixing zone, but all classification standards must be maintained outside that area. The deposition of organic materials on the sea floor can, through decomposition, result in depletion of oxygen in the sediments composing the sea floor. This, in turn, can render the area unsuitable for a normal number and diversity of natural organisms. Such conditions, which may occur in varying degrees, may be evidenced by the formation of gas in the sediment, the predominance of pollution-tolerant organisms or the loss of certain species. Since most of the accumulating material is biodegradable through natural processes, the reduction or suspension of aquaculture activities will allow mitigation of benthic impacts without long-term impacts.

There are concerns that an aquaculture facility may harbor diseases or parasites that could spread to wild or other aquaculture facility. The use of disinfectants is a necessary part of preventative practices, and the Department supports their use consistent with recommendations of fish health authorities. However, the use of medications and disinfectants pose potential concerns for toxicity if discharged in excessive amounts. These effects include acute toxicity to non-target aquatic organisms in the immediate area of the use, chronic effects on benthic organisms and bioaccumulation in the food chain.

The placement of net pens in the water does limit certain narrative uses of the waterbody. These concerns include fishing and navigation. These arise from the physical placement of the pens, not discharge activities, and are therefore are not subject to regulation as pollutant discharges under this General Permit. However, the MeDMR lease approval process and the US Army Corps of Engineers permits for net pen aquaculture facilities consider these potential issues. By requiring evidence of other permits, the General Permit assures that the placement of the net pens does not violate the designated uses for the waterbody.

## 12. DISCHARGE IMPACT ON RECEIVING WATER QUALITY (cont'd)

In November, 2000, the Services issued a final rule listing Atlantic salmon populations in certain Maine rivers and streams as “endangered” under the federal Endangered Species Act. The listing identified several risks to Atlantic salmon posed by finfish aquaculture, including potential spread of diseases, and the potential that escaped cultured fish could disrupt reproduction of river populations of Atlantic salmon. The General Permit contains conditions for Atlantic salmon aquaculture operations in three primary areas: loss prevention through audited containment practices, marking of fish to identify the origin of any fish that may escape, and use of only North American strains of Atlantic salmon.

The Department has considered each of these potential impacts and developed permit limits to address or control each. As permitted, net pen aquaculture facilities operating in compliance with the terms of conditions of this General Permit will not cause or contribute to non-attainment of applicable water quality standards.

## 13. PUBLIC COMMENTS

Public notice of this intent to renew the September 22, 2008 General Permit was made in the Bangor Daily, Kennebec Journal, Sun-Journal, and Portland Press Herald newspapers between September 24-27, 2013. The Department receives public comments on an application until the date a final agency action is taken on the application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to *Application Processing Procedures for Waste Discharge Licenses*, 06-096 CMR 522 (effective January 12, 2001).

## 14. DEPARTMENT CONTACTS

Additional information concerning this permitting action may be obtained from, and written comments sent to:

Bill Hinkel  
Division of Water Quality Management  
Bureau of Land & Water Quality  
Department of Environmental Protection  
17 State House Station  
Augusta, Maine 04333-0017 Telephone: (207) 485-2281 Fax: (207) 287-3435  
e-mail: [bill.hinkel@maine.gov](mailto:bill.hinkel@maine.gov)



## 15. RESPONSE TO COMMENTS

In accordance with the National Pollutant Discharge Elimination System Memorandum of Agreement Between the State of Maine and the United States Environmental Protection Agency, finalized on January 12, 2001, and 40 CFR 123.44(a)(2), the USEPA make take up to 90 days from receipt of the proposed General Permit to comment upon, object to or make recommendations with respect to the proposed permit. During the period of December 2, 2013 through the effective date of this final agency action, the Department solicited comments on the draft General Permit – Net Pen Aquaculture. The Department received comments from the sources identified below on the date specified and responses to those comments are organized by subject matter. It is noted that minor typographical and grammatical errors identified in comments were not included in this section, but were corrected, where necessary, in the final permit.

- C-1 Jennifer Robinson, Compliance Officer, Cooke Aquaculture, USA (Cooke), December 31, 2013
- C-2 Sebastian Belle, Executive Director, Maine Aquaculture Association (MAA), January 2, 2014
- C-3 David Bean, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS), December 30, 2013
- C-4 Wende Mahaney, U.S. Fish and Wildlife Service (USFWS), January 2, 2014
- C-5 Commissioner Patrick Keliher, Maine Department of Marine Resources (MeDMR), January 2, 2014
- C-6 David Webster, USEPA Region 1, February 7, 2014
- C-7 Chris Vonderweidt, Policy Development Specialist, Maine Department of Marine Resources (MeDMR), March 11, 2014 and April 2, 2014
- C-8 Jennie Bridge, USEPA Region 1, April 3, 2014
- C-9 Jennifer Robinson, Compliance Officer, Cooke Aquaculture, USA (Cooke), April 9, 2014

### **General Comments**

- 1) **Comment:** Cooke is proud of its stewardship of Maine waters, and has been diligently working to implement, comply with, and exceed the requirements of MEG130000 since its inception. Cooke wishes particularly to commend the Department for adopting an operational plan approach that requires the operator to continue best management practices, but not to micromanage all operational and monitoring aspects associated with daily and otherwise regular implementation of its best management practices.

Instead of requiring video monitoring under the general permit, which was properly eliminated in the draft permit, support Cooke's continuation of video monitoring as a subject outside of the general permit under a Memorandum of Understanding with the MeDMR. Even under the new framework of the current draft permit, Cooke will be maintaining, for its own stewardship and on a voluntary basis, site videos. (C-1)

**Response:** The MeDMR stated that it intends to initiate rulemaking to require video monitoring under its aquaculture monitoring program and data collection

## 15. RESPONSE TO COMMENTS (cont'd)

authorities (12 M.R.S. §§ 6072, 6077), where it will more appropriately provide this advance warning function. No changes were made based on this comment.

- 2) **Comment:** USEPA Region 1 stated that the renewed general permit must contain the same conditions pertaining to the following discharge prohibitions that were contained in the previous general permit.
- a. Bacteria from domestic waste (2008 GP, p.12)
  - b. Toxics in toxic concentrations (2008 GP, p.26)
  - c. Toxics from facility in sediments (2008 GP, p.27)
  - d. Blood and viscera during harvest (2008 GP, p.30)
  - e. Biocidals for cleaning nets on-site (2008 GP, p.31)
  - f. Tributyltin (TBT) (2008 GP, p.31) (C-6)

### **Response:**

Bacteria. The 2008 general permit contains the following condition: “Domestic waste shall not be discharged and must be collected and transported to a land-based facility authorized to dispose domestic waste discharge prohibition.” Neither the 2008 general permit nor the draft renewal general permit authorize the discharge of domestic waste. Special Condition E of the draft general permit identifies the types of wastes authorized, of which domestic waste is not specified. A person covered under this general permit does not apply for and is not authorized to discharge domestic waste. The general permit specifies the types of discharges that *are* authorized, not an exhaustive list of pollutants that are not authorized.

Toxics. The 2008 general permit contains the following condition: “The discharge of toxics into the waters of the State in concentrations identified by the Department as toxic to aquatic organisms is prohibited.” Special Condition J of the draft permit contains the following boilerplate narrative limitation language: “The permittee must not discharge pollutants that contain materials in concentrations or combinations that are hazardous or toxic to aquatic life, or that would impair the existing or designated uses of the receiving waters.” This condition applies to the designated uses of the receiving water for both the water column and the seafloor.

Blood and viscera. The 2009 general permit contains the following condition: “The discharge of blood, viscera, or transport water containing blood associated with fish harvesting is prohibited.” Special Condition K.3 of the draft general

#### **15. RESPONSE TO COMMENTS (cont’d)**

permit contains the following condition: “Transport or harvest discharge. The permittee must minimize any discharge associated with the transport or harvesting of aquatic animals including blood, viscera, aquatic animal carcasses, or transport water containing blood.” This condition is consistent with 40 CFR 451.21(c).

Biocidals for cleaning nets. The 2008 general permit contains the following condition:

The use of biocidal chemicals for cleaning nets on-site is prohibited. The use of air-drying, mechanical and other non-chemical procedures to control net-fouling organisms is encouraged. On-site mechanical cleaning and pressure washing of nets is permitted only if done in accordance with a management plan to assure that solids from these practices do not accumulate on the sea floor or cause or contribute to impairment of water quality standards, or non-compliance with Special Condition II.F. In order to control diseases of regulatory concern, net cleaning procedures required by the MeDMR or the US Department of Agriculture shall be followed. The on-shore disposal of materials removed from nets must be in compliance with applicable state and local laws. In the event that sediment monitoring indicates a potential for impact from copper or other anti-fouling agents or other established impact limits, the Department may require the use of alternate practices to avoid such effects.

Special Condition M of the draft general permit contains the following condition: “The use of biocidal chemicals for cleaning nets on-site is only authorized by this General Permit if expressly required in writing by the Maine Department of Marine Resources or U.S. Department of Agriculture. On-site mechanical cleaning and pressure washing of nets is authorized by this General Permit only if completed in accordance with a management plan to assure that solids from these practices do not accumulate on the sea floor or cause or contribute to a violation of this General Permit or applicable water quality standards outside the mixing zone.”

Tributyltin. The 2008 general permit contains the following condition: “Pursuant to *Prohibition on the use of tributyltin as an antifouling agent*, 38 M.R.S.A. § 419-A(2)(B), no person may distribute, possess, sell, offer for sale, apply or offer for application any substance that contains a tributyltin (TBT) compound in concentrated form that is labeled for mixing with paint or solvents to produce an

antifouling paint for use on vessels, wooden lobster traps, fishing gear for marine waters, floats, moorings or piers.” As discussed under Bacteria above, the general

## 15. RESPONSE TO COMMENTS (cont’d)

permit specifies the types of discharges that *are* authorized, not an exhaustive list of pollutants that are not authorized. The statute prohibiting the use of tributyltin on fishing gear for marine waters is self-implementing and need not be repeated in the general permit.

The terms and conditions established in the general permit provide reasonable assurance that applicable water quality standards will be achieved. Nothing in the draft general permit reduces or eliminates the prohibitions discussed above that were established in the 2008 general permit. No changes were made based on this comment.

- 3) **Comment:** The Department has made significant efforts to simplify the permit while maintaining its efficacy and protective nature. MAA supports these efforts. (C-2)

**Response:** The Department acknowledges MAA’s support to refine the aquaculture general permit. No changes were made based on this comment.

### **Permit Condition: Applicability and Coverage**

*Subject: Area of coverage*

- 4) **Comment:** The draft permit only covers net pen aquaculture facilities operated in Class SB or SC waters which are located east of Naskeag Point in Brooklin, except those waters located in the area north of a line from Schoodic Point in Winter Harbor west to Baker Island in Cranberry Isles, then west to Naskeag Point in Brooklin, Maine. MAA stated that this area of coverage was defined for purely political purposes and that the draft permit contains multiple provisions to ensure that any potential risks that may be associated with the location of a fish farm in any area within State waters are very aggressively monitored and addressed. The permit should cover any operations in Class SB and SC waters that meet its conditions and requirements. Aside from local politics there appears to be no valid justification for distinguishing and precluding any other specific water bodies in the permit. Indeed the exclusion of other SB and SC waters in the proposed general permit appears to be an acknowledgement by the State that finfish aquaculture development in other areas of the State will be discouraged and forced to go through additional application and permitting requirements even though the conditions established within the general permit are designed to be conservative and fully protective of Class SB and SC waters. MAA requested that the general permit be revised to cover net pen aquaculture facilities operated in all Class SB and SC waters that meet their ascribed classification. (C-2)

**Response:** The area of coverage has remained unchanged since issuance of the initial aquaculture general permit in September 2003. The area of coverage was

selected by the Department due to the current patterns and flushing rates associated with this area as a result of the eastern Maine coastal current (EMCC). The great natural surplus of nutrients associated with the EMCC makes the

#### 15. RESPONSE TO COMMENTS (cont'd)

contribution of nutrients from aquaculture or other anthropogenic sources a minimal risk to water quality. Because nutrients have the most potential for wide-area impacts from aquaculture activities, it is appropriate to design the permit coverage based on this consideration. Other potential impacts, such as dissolved oxygen or benthic impacts are localized risks that can be addressed through individual siting criteria or operating limitations.

The commenter has not provided compelling new information that the basis for the original area of coverage is inappropriate or is unnecessarily restrictive. The Department continues to believe it is prudent to exclude from general permit coverage certain areas along the Maine coast that may be higher risk for water quality impacts. This exclusion should not be construed to mean that the Department would not issue an individual permit for aquaculture activities within the excluded area of coverage provided all criteria to obtain a permit for such a discharge are met. Rather, the Department reserves the right to regulate those facilities under full authority of Maine's water quality laws and without restriction imposed through a general permit mechanism. No changes were made based on this comment. (C-2)

*Subject: Current velocity*

- 5) **Comment:** USEPA Region 1 questioned why the current velocity qualifier language stating that the current velocity must be sufficient "to avoid degradation of water quality and benthic conditions described in state water quality standards" was removed. (C-6)

**Response:** The Department revisited all language in the 2008 general permit in an effort to simplify the permit, make it more enforceable, and less subjective. The Department made a determination that the language in question was subjective, ambiguous and unnecessary. The draft general permit contains terms, consistent with agency rules, which allow the Department to require an individual permit for a variety of reasons. This provision, at Special Condition D.3.b of the general permit, provides the same ability to require an individual permit as the qualifying language contained in the previous permit. No changes were made based on this comment.

- 6) **Comment:** MAA suggested either dropping the 5 cm per second applicability and eligibility criterion or reinserting language from a previous permit that read "Current velocity shall, in consideration of the physical conditions at individual locations covered by this General Permit, be sufficient to avoid degradation of water quality and benthic conditions described in State water quality standards and limits contained in this permit."

MAA expressed concern that the method of calculating the average current velocity over at least one tidal cycle requires the applicant to include a zero current velocity value that occurs at the slack water between the ebb and flow stages of the tidal cycle. By including a zero and depending on current velocities during the rest of the tidal cycle, the

#### **15. RESPONSE TO COMMENTS (cont'd)**

Department is effectively requiring a minimum average current speed significantly higher than the 5 cm per second. If the 5 cm per second requirement stands the Department

should clarify that the zero value measured at slack water should not be included in the current velocity calculation.

MAA stated that finding sites that meet the minimum current criterion but that are not over hard bottom that is actively fished for lobster is extremely difficult. By granting the lobster fishery preemptive rights to hard bottom, higher current areas, the State is effectively pushing finfish operators into areas that will not meet the minimum current requirements of the general permit. The intent of the minimum current requirement is to encourage finfish operators to seek areas with characteristics that reduce the risk of exceeding a site's carrying capacity and violating the State's water quality criteria. MAA supports that intent but would respectfully suggest that the Department can meet that intent while allowing for some professional judgment. (C-2)

**Response:** The current velocity siting criterion of 5 cm/sec is within the range used by other jurisdictions. The Department's experience with this industry suggests that a minimum velocity of 5 cm/sec as a siting criterion for the general permit is appropriate.

The Department's obligation in this regulatory proceeding is to administer Maine's water quality laws and rules and ensure discharges are regulated in such a manner as to protect receiving water quality and meet designated water quality standards. The Department may issue a general permit for a category of discharges: 1) that involves the same or substantially similar types of operations; 2) where the discharge is of the same types of wastes; 3) that require the same effluent limitations or operating conditions; and 4) that require the same or similar monitoring. 06-096 CMR 529(2)(2)(ii). The current velocity criterion established in the 2003 general permit, which has been carried through into this third iteration of the general permit, is one of the key criteria used to define a category of discharge able to be regulated efficiently and effectively through a general permit. Eliminating this criterion from the applicability and coverage condition of the general permit will weaken the Department's effort to regulate this category of discharges through a general permit mechanism. The commenter's proposed language revision adds subjectivity and ambiguity to a determination of whether or not a facility would be eligible for coverage under this general permit. No changes were made based on this comment.

*Subject: Fish density*

- 7) **Comment:** USEPA Region 1 questioned why the water quality condition stating that the maximum rearing density shall be low enough to avoid degradation to water quality and benthic conditions described in state water quality standards in the

## 15. RESPONSE TO COMMENTS (cont'd)

applicability and coverage section of the 2008 general permit was removed from the draft permit. (C-6)

**Response:** The Department revisited all language in the 2008 general permit in an effort to simplify the permit, make it more enforceable, and less subjective. The Department made a determination that the language in question was subjective, ambiguous and unnecessary. The Department is not aware of a specific rearing density or range that would cause degradation to water quality conditions. The primary source of pollution from a net pen facility is fish feed. Measures to control the discharge of uneaten feed are established in the general permit, and this is the most effective way to avoid degradation of water quality and benthic conditions. See Special Condition K.1 of the general permit. Maximum rearing density was added to the definitions section to make clear what is required as part of a complete Notice of Intent form. Special Condition E of the general permit provides that the permittee may only operate in accordance with the NOI accepted as complete by the Department. Therefore, the maximum rearing density must be identified as part of the application process and the permittee may not exceed the rearing density provided on the NOI form. Special Condition D.3.b) provides that the Department may require an individual permit for the reasons specified. No changes were made based on this comment.

### **Permit Condition: Notification, Decisions and Effective Date of Coverage**

*Subject: NOI information*

- 8) **Comment:** MAA stated that the requirement for the applicant to disclose the composition of fish feed including trace ingredients in their NOI is problematic because fish feed formulations are highly proprietary and may provide an applicant's competitors with important business confidential information that compromises an applicant's competitive position, and because fish feed formulations change frequently depending on ingredient commodity prices and availability, innovations in feed manufacturing technologies and the state of knowledge in animal nutritional science. The requirement to disclose fish feed compositions should be dropped from the permit. (C-2)

**Response:** Application requirements for concentrated aquatic animal production facilities are specified at 40 CFR 122.21(2)(C) and *Applications for Waste Discharge License*, 06-096 CMR 521(4)(h)(4)(i)(2) (effective January 12, 2001). With respect to feed, the rules require reporting of the total pounds of food during the calendar month of maximum feeding. Due to concerns raised during development of the 2003 general permit regarding the composition of feed because the industry has not been previously regulated in Maine, the Department

established additional requirements in that and subsequent general permits to report the composition of fish feed, including trace ingredients, proposed for use at the facility. To date, the Department has not identified the need to establish specific effluent limitations based on reported feed composition. Therefore, the

## 15. RESPONSE TO COMMENTS (cont'd)

Department has eliminated the requirement to report the composition of fish feed, including trace ingredients, and has revised the application (NOI) requirements to be consistent with NPDES and Department rules.

- 9) **Comment:** MAA stated that the draft permit requirement to provide a valid, current or conditional lease from the Maine Department of Marine Resources pursuant to *Leases and Special Licenses*, 12 M.R.S.A. § 6072 or § 6072-A, and a valid permit issued by the U.S. Army Corps of Engineers pursuant to Section 10 of the *Rivers and Harbors Act of 1899*, Title 33 U.S.C. 403 to satisfy title, right or interest requirements prevents an applicant from simultaneously applying for the multiple permits they need to operate, which will result in an extended permitting cycle and delayed operational start. MAA respectfully requests that Department consider modifying this requirement to allow the use of completed and accepted applications to, in addition to final permits from, these agencies as “evidence of interest” under the MEPDES General Permit. (C-2)

**Response:** *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2(11)(D) (last amended August 25, 2013) contains the criteria for title, right or interest. The rule provides the Department with discretion to determine what constitutes sufficient title, right or interest and, as an example, provides that “[w]hen the applicant has an option to buy or lease the property, a copy of the option agreement must be supplied.” The Department finds that an application for a lease or permit, which has been accepted as complete for processing by the Maine Department of Marine Resources and U.S. Army Corps of Engineers, is sufficient title, right or interest in the property proposed for development or use and has revised this application (NOI) requirement accordingly.

*Subject: Decisions – Individual permit coverage*

- 10) **Comment:** MAA objects to the language in this section that allows any “interested party” to request that a facility be covered by an individual rather than a general permit. The definitions section of the draft permit contains no definition of the term “interested party,” nor does the permit define a time period during which such a request can be made. MAA asserts that as long as an applicant has successfully applied for coverage under the general permit and as long as said applicant/permit holder is deemed in compliance by the Department with the standards and conditions established by the general permit “interested parties” should have no ability to trigger an examination by the Department as to whether an individual permit is required instead of a general permit. (C-2)



**Response:** This provision in the general permit is consistent with 06-096 CMR 529(2)(3)(i). This condition applies to all general permits issued for wastewater discharges. No changes were made based on this comment.

## 15. RESPONSE TO COMMENTS (cont'd)

*Subject: Changed conditions*

- 11) **Comment:** MAA stated that there are a number of circumstances related to changed conditions that may occur in which the provision in the draft permit to allow the Department up to 31 days after receipt of a completed NOI or date of public notice is published, whichever is later, to notify an applicant as to whether a specific discharge is permitted and granted coverage under the permit would be problematic.

MAA suggested clarification of the level of mooring changes that would require reporting. Only those changes that will significantly impact the location of any environmental footprint should trigger a reporting requirement.

MAA also suggested that the following language be added to this section: "In the event the Department deems the proposed changes to the nature or scope of operations of a facility are significant enough to require the submission of a new NOI, the Department shall review and approve or reject the new NOI within 10 days of its submission. In the event of an emergency situation every effort shall be made to respond to the new NOI as quickly as is reasonably possible." (C-2)

**Response:** 06-096 CMR 529(2)(3)(i)(E) provides that an individual permit may be required, for among other reasons, where "[c]ircumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary." Additionally, Condition D.1(a) of *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, specifies that "[t]he permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility." Based on the degree of change(s) and evaluation of how the proposed change(s), the Department will use its discretion to decide whether a new NOI must be filed for coverage under the general permit or whether the discharge would be more appropriately controlled under an individual permit. Only when there will be a substantial change in the activity that occurred after the time coverage under the general permit was issued will a new NOI or application for individual permit be required. In those instances, public notice and the 30-day NOI review period are appropriate. (It is noted that the Department may take up to 30 days to review a NOI. On the 31<sup>st</sup> day a decision must be made.) No changes were made based on this comment.

## 15. RESPONSE TO COMMENTS (cont'd)

### Permit Condition: Best Practical Treatment

*Subject: Carcass removal*

- 12) **Comment:** USEPA Region 1 stated “The existing permit requires that fish carcasses be removed from net pens at least once per week, and more frequently when diseases of regulatory concern are present, or suspect. In the draft GP, why was this water quality condition changed to removal ‘on a regular basis’, and why was ‘regular basis’ not defined in the permit?” (C-6)

**Response:** The draft general permit is consistent with the best practicable treatment promulgated at 40 CFR 451.21. In reviewing the language in this section of the 2008 general permit, the Department concluded that prescribing the removal frequency was inappropriate and was better left to the permittee to incorporate into facility plans. The Department has revised the final general permit at Special Condition L to specify that all BPT requirements must be addressed in the facility’s O&M Plan.

### Permit Condition: Sediment and Benthic Monitoring Requirements and Limitations

*Subject: General comments*

- 13) **Comment:** USEPA Region 1 stated that it is concerned that the draft general permit reduces the monitoring requirements found in the 2008 general permit which were important to show attainment and maintenance of applicable water quality standards and compliance with the permit. The fact sheet lacks adequate justification for these changes from the current permit. Specifically, the draft general permit does not include:
- a. ambient water quality monitoring for bacteria;
  - b. ambient water quality monitoring for dissolved oxygen;
  - c. ambient water quality and sediment & benthic monitoring for toxics; and
  - d. adequate ambient sediment and benthic monitoring for assessing attainment of aquatic life narrative criteria.

Removal of or changes to these monitoring requirements must be explained. (C-6)

### **Response:**

Bacteria. The 2008 general permit did not establish requirements to conduct ambient monitoring for bacteria. Maine’s water quality standards for bacteria are enterococcus bacteria of human and domestic animal origin. 38 M.R.S.A. § 465-B. The discharge from a net pen aquaculture facility is not a source of enterococcus bacteria of human and domestic animal origin. Therefore, ambient bacteria monitoring is not required by the general permit.

## 15. RESPONSE TO COMMENTS (cont'd)

Dissolved oxygen. The fact sheet associated with the 2008 general permit provides the basis for elimination of ambient dissolved oxygen monitoring. Ambient monitoring data for the period of September 2003 – October 2007 indicates substantial compliance with the numeric dissolved oxygen limitations. A total of 1 of 575 (0.2%) minimum dissolved oxygen concentration monitoring results was below the mixing zone limit of 6 mg/L (5.03 mg/L reported for one facility during August 2004). All remaining 574 DO concentration data points are above the 6 mg/L limit. Previous monitoring has demonstrated that ambient DO monitoring is not necessary to ensure applicable water quality standards are achieved. It is noted, however, that the water column mixing zone established in the 2008 general permit has been added back to the draft general permit, at the request of USEPA Region 1, and specifies that “[t]he Department reserves the right to require routine or periodic dissolved oxygen monitoring within the water column mixing zone for any facility covered under this General Permit.”

Toxics. Net pen aquaculture facilities are not a source of routine discharges of toxic pollutants. These facilities rear sensitive fish species that would suffer as a result of discharges of toxic pollutants. Water quality and sediment & benthic monitoring for toxics is required, when appropriate, in accordance with Special Condition N, *Use of Drugs for Disease Control*, which is the only potential source of a discharge that may have toxicity effects on marine life.

Assessing attainment of aquatic life narrative criteria. The draft general permit contains a requirement to conduct benthic monitoring to assess the condition of the resident biological community, as it pertains to the designated use of habitat for estuarine and marine species indigenous to the receiving water, if measured sulfide levels indicate potential benthic impact. Due to the nature of rearing fish in the marine environment, frequent benthic monitoring is ineffective in assessing compliance with water quality standards. The quantity of pollutants associated with aquaculture fish during the first roughly 12 months following stocking is minimal. Years of experience regulating this industry in Maine has taught the Department that benthic impacts, if they occur, are associated with peak biomass at a facility, which is when monitoring is required as conditioned in the draft general permit. In addition, the Department’s experience with this industry suggests that requiring routine benthic infauna monitoring is not a cost-effective manner to regulate. Many sites experience strong ocean currents and bottom disturbance associated with storms such that there is very little or no accumulation of excess fish feed. Thus, routine and costly benthic monitoring at certain sites is not sensible. The Department’s approach in the draft general permit is to use sulfide as an indicator of potential benthic impact that triggers more extensive benthic sampling. The Department is confident, based on its extensive experience regulating the aquaculture industry, that this approach is reasonable and prudent to ensure a proper level of regulatory oversight and assessment of applicable water quality standards. No changes were made based on this comment.

## 15. RESPONSE TO COMMENTS (cont'd)

- 14) **Comment:** USEPA Region 1 stated, “In the current permit, video monitoring and sulfide evaluations of the sea floor are required at a minimum frequency of twice per year. In the draft permit, video monitoring is eliminated, and the screening for sulfide is required only once per growing cycle, which might occur once every 2-3 years. (Additional sediment and benthic monitoring is only required following an exceedance of the sulfide action level, even for purposes of evaluating conditions prior to restocking pens.) These less rigorous locational, exceedance trigger, and frequency aspects of the new monitoring strategy all create the potential for unchecked benthic degradation beneath and surrounding the net pens.” (C-6)

**Response:** The Department’s experience regulating this industry is that sulfide conditions are not significantly affected early in the grow cycle. Thus, monitoring before peak biomass has little benefit in terms of assessing true impact of the facility on the environment. The 2008 general permit contains a provision allowing the Department to waive the spring sulfide and video survey sampling requirements when there have been no fish on the site since the previous monitoring event or if monitoring results from the preceding fall indicate the site is in compliance with applicable permit standards. This provision was frequently utilized by permittees to avoid unnecessary monitoring. The revised monitoring strategy requires benthic monitoring after exceedance of a sulfide standard, rather than the default once every five years established in the previous permit. The revised monitoring strategy builds on the Department’s experience with this industry and the data evaluated over the years. The Department believes the draft general permit monitoring strategy is appropriate and allows adequate monitoring to assess compliance with applicable water quality standards. It is noted that Standard Condition A.4. of *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, provides that “[t]he permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine...compliance with this permit.” Should additional sediment and benthic monitoring requirements be deemed necessary to evaluate compliance with the general permit, the Department has reserved the right to require such monitoring. No changes were made based on this comment.

- 15) **Comment:** USEPA Region 1 stated that monitoring locations were changed from the previous permit without adequate explanation. In the current permit, requirements for monitoring impacts to the seafloor involve sampling under the net pens, within 30 meters in all directions from the net pen edge, and outside the sediment mixing zone, as well as at reference sites.

Sediment and benthic monitoring requirements in the draft GP rely on monitoring only outside the “sediment mixing zone,” and the current requirement for monitoring reference sites have been eliminated (thus eliminating baseline information on benthic community structure beyond the sediment impact zone). Furthermore, there are no monitoring requirements in the draft GP for these parameters at the surface, or within the water

## 15. RESPONSE TO COMMENTS (cont'd)

column, or within or beyond the sediment mixing zone. As written the draft permit does not appear to include adequate provisions for monitoring to assure compliance with permit conditions. (C-6)

**Response:** The compliance point for sampling outside the mixing zone was set at 35 meters beyond the edge of the outermost net pens, rather than at exactly at 30 meters as was established in the previous general permit, to ensure these compliance samples were clearly collected from outside the mixing zone. Due to the difficulty of precisely measuring the horizontal distance from the edge of the net pens to establish a sampling station, there has been long-standing concern expressed by the industry that compliance samples required at 30 meters may actually be from stations that are located within the 30-meter mixing zone. The Department made a best professional judgment decision to change the compliance point for sampling outside the mixing zone to 35 meters to ensure samples are representative of conditions beyond the mixing zone.

The 2008 general permit and 2011 general permit modification contain sediment and benthic standards that compare changes in certain metrics to reference site data. The Department is shifting away from this concept of comparing compliance data from a net pen facility to reference site for three main reasons: 1) the diversity and variability of bottom conditions makes comparison of compliance station data to reference station data subjective; 2) the aquaculture industry has had difficulty locating appropriate reference sites for all of the permitted facilities; and 3) perhaps most importantly, the Department is establishing absolute numeric standards for the benthic community rather than relying on a comparison to reference site data. This revised approach establishes an objective standard up front and eliminates subjectivity and uncertainty associated with evaluating each data set on a case-by-case basis to determine compliance with applicable water quality standards.

Monitoring within the sediment mixing zone is required for sulfides, which serve as an indicator of benthic conditions. The draft general permit contains a restocking threshold for sulfide to ensure that within the mixing zone fish are not restocked before bottom conditions indicate the benthic condition is not polluted and is capable of supporting the designated use of habitat for estuarine and marine life.

The general permit has been revised, as requested by USEPA Region 1, to require routine monitoring for sulfides within the mixing zone to assess conditions prior to authorizing the restocking of fish following a harvest or fallow period.

## 15. RESPONSE TO COMMENTS (cont'd)

- 16) **Comment:** Since the mid-1980s, finfish farms in the state of Maine have been monitored with underwater, and under-farm video transects as part of the Finfish Aquaculture Monitoring Program or FAMP, and since 2003, under a Department DEP waste discharge permit. Video monitoring is one of the most important environmental monitoring tools because it allows early detection of organic loading under net pens.

The draft permit proposes screening monitoring consisting of a single sulfide metric derived from a mean of four sampling locations located 35 meters from the net-pens. These samples would be obtained once during the growing period or approximately once every two years. MeDMR appreciates that video monitoring under pens is difficult to quantify, and therefore challenging to use as a regulatory tool in a discharge permit based on numeric thresholds. MeDMR intends to initiate rulemaking to require video monitoring under our aquaculture monitoring program and data collection authorities (12 M.R.S. §§ 6072, 6077), where it will more appropriately provide this advance warning function. (C-5)

USEPA Region 1 stated, “the video monitoring requirement is eliminated in the draft GP, thus removing an effective method of identifying benthic problems before they become severe enough to cause impacts beyond the mixing zone.” (C-6)

**Response:** The Department agrees with MeDMR that video monitoring is a useful tool for operational management of the site, but not as a regulatory compliance mechanism in the general permit. The Department supports MeDMR’s intent to incorporate this as a requirement under its aquaculture monitoring program and data collection authorities. No changes were made based on this comment.

- 17) **Comment:** MAA objects to the disjunctive “OR” and suggested the use of the conjunctive “AND” because 1) the sediment and benthic monitoring parameters rely on different indicators of conditions at a site; 2) the parameters may move independently of one another and may signal different effects on the resident biological community; and 3) the marine ecosystem is a complex and dynamic system that requires holistic and complete assessment of the effect of aquaculture operations on the marine environment. The change from “OR” to “AND” in evaluating biological metrics is also supported by Cooke and MeDMR. (C-2)(C-3)(C-5)

Cooke is particularly concerned with the Department’s use of the disjunctive “or” to connect the permit limits; in the recent MEG permits, the Department has used the conjunction “AND” to connect the permit limits. The use of the conjunction “AND” is more appropriate for several reasons: (1) the sediment and benthic monitoring parameters rely on different indicators of conditions at a site; (2) the parameters may move independently of one another and may signal different effects on the resident biological community; and (3) the marine ecosystem is a complex and dynamic system that requires holistic and complete assessment of the effect of aquaculture operations on the marine environment. Both the Shannon-Wiener Diversity Index and either (but not both of) the

## 15. RESPONSE TO COMMENTS (cont'd)

total abundance (*Capitella capitata*) or sulfide parameters, if used, should be analyzed in conjunction with each other to determine whether there is any adverse impact or if receiving waters are sufficient to support indigenous fish and maintain the structure and function of the resident biological community. (C-1)

**Response:** The Department agrees with the commenters that a determination of compliance with applicable water quality standards should be based on a holistic assessment of monitoring parameters rather than reliance on a single metric. The Department's experience with net pen aquaculture in Maine has demonstrated that benthic conditions and the designated use of habitat can be met even when a sulfide result or other single metric exceeds the threshold established in the general permit. The disjunctive "OR" may result in violations of the water quality-based permit limits when water quality standards have not been violated. Therefore, and based on best professional judgment, the final general permit has been revised to link the sediment and benthic metrics for purposes of determining permit compliance.

- 18) **Comment:** Shannon-Wiener Diversity and percent capitellid worms are measures of the biological community response to the third metric monitored, sulfide level (a chemical measurement of sulfide in the sediments and a precursor to the biological response). Sulfide measurements are proposed as part of the exceedance monitoring; however, it will be sulfide values that require the exceedance monitoring to be conducted. Doing another round of sulfide monitoring seems duplicative as the value has already been established and is unlikely to change significantly between monitoring events. Additionally, MeDMR would like to see an analysis of sulfides and benthic infauna provided to support the reduction of permitted sulfide values from 3,000 uM to 1,500 uM beyond the sediment mixing zone and 6,000 uM to 1,500 uM within the sediment mixing zone. Use of the Hargrave paper alone, rather than in conjunction with analysis of Maine farms, is an insufficient basis for determination. (C-5)

**Response:** The Department has revised the draft general permit to clarify that sulfide monitoring need not be repeated. At peak biomass, the permittee must collect and analyze samples for sulfide and if the results exceed the limits established in the general permit, the permittee must proceed with more extensive benthic monitoring. The results from the initial sulfide sampling event, or sulfide results that were obtained closer in time to the collection of benthic samples, will be used in conjunction with benthic results to determine compliance with the general permit.

Due to a lack of available resources, the Department has not completed an in-depth analysis of sulfide and benthic infauna data generated by net pen facilities in Maine to develop a precise correlation between these metrics. As part of the continuing evolution of Maine's knowledge of the aquaculture industry and understanding of the most appropriate manner with which to regulate this point source category, the Department will continue to use compliance data to refine the



## 15. RESPONSE TO COMMENTS (cont'd)

general permit. Since issuance of the 2003 general permit the Department has made several significant changes in how it regulates this industry. The Department is using all available information to establish numeric water quality-based limitations in this general permit based on best professional judgment.

*Subject: Sulfide monitoring, thresholds, and limitations*

- 19) **Comment:** USEPA Region 1 expressed concern that the draft general permit provides for the averaging of sulfide samples because it can mask the more degraded areas that exist on just one side of the system. (C-6)

**Response:** Establishing permit compliance based on sulfide results from a single sampling station is not appropriate or representative as required by 40 CFR 122.41(j). Due to the variability of seafloor conditions and distribution of pollutants in the marine environment, the Department has made a determination that compliance with benthic standards established in the general permit should be assessed based on the average of all sampled collected at the designated stations beyond the mixing zone. Appendix A of the general permit requires submission of sample results from individual replicates, in addition to reporting of the mean, which will be used, in part, to determine whether the sampling locations at a particular facility are most appropriate to achieve representative sampling. No changes were made based on this comment.

- 20) **Comment:** Supporting analysis for the proposed sulfide standards of 750 uM (reduced from an impact limit of 3,000 uM in the last permit) at 35 meters is insufficient, and DMR is concerned that these standards may be unnecessarily restrictive if they do not take into account ambient and naturally occurring sulfide values at farm sites. Off-farm reference stations have been eliminated in the draft permit. Sulfide values have been collected as part of Department permits since 2003. Correlation of those ten years of sulfide data with benthic infauna conditions found at the time the sulfide samples were collected would lead to the establishment of biologically meaningful sulfide limits. There may be a lag time between high sulfide values and the resulting change in benthic infauna resulting from those high sulfide values. A comprehensive analysis of existing data would provide the most scientifically defensible limits. (C-5)

**Response:** The Department has not completed its analysis of all compliance data to develop strong correlations between sulfide levels and benthic infauna community. Once this task has been completed, the Department will utilize its findings in subsequent permitting actions. See consolidated response #23 below.

## 15. RESPONSE TO COMMENTS (cont'd)

- 21) **Comment:** Revise the Screening Action Level for sulfide from 750 uM to 1,500 uM. Cooke provided comment that the author of “Empirical relationships describing benthic impacts of salmon aquaculture,” cited in the fact sheet as part of the basis for the 750 uM action level threshold, stated in personal communication that 1,500 uM would be a more appropriate threshold as an oxic-hypoxic transition indicator. Cooke additionally stated that 1,500 uM would be consistent with ambient natural range for sulfides outside of farm locations noting that data collected in Maine at reference sites (>100 m from net pens) show sulfide levels ranging from 8 to 968 uM. (C-1)

**Response:** See consolidated Response #23 below.

- 22) **Comment:** Eliminate sulfide as an exceedance limitation, or in the alternative, revise the limitation from  $\geq 1,500$  uM to 2,500 uM for Class SB waters and 3,000 uM for Class SC waters. A sulfide level of 2,500 uM is still within the “transitory” benthic condition and well below the 4,000 uM value where conditions become “polluted.” The sulfide level of 3,000 uM is the level at which the benthic conditions are between “transitory” (supporting moderate macroinvertebrate diversity) and the 4,000 uM value where conditions are considered “polluted.” (C-1)

**Response:** See consolidated Response #23 below.

- 23) **Comment:** The use of 750uM as a trigger for “exceedance” monitoring is entirely inappropriate and not supported by the science. The Hargrave paper cited in the fact sheet states that the 750 uM value indicates a “normal” oxic benthic ecosystem. A finding of “normal” conditions can hardly be called an “exceedance.” According to Hargrave, it is not until sulfide levels reach 1,750 uM that organic loading from fish farms begin to cause conditions characterized as early stage “transitory” and slightly hypoxic. This value is considerably lower than those found by Brooks (2001) and Brooks and Mahnken (2003) that indicated values of 3,000-6,000 were needed in order to indicate hypoxic/anoxic conditions. MAA requested that the screening action level be revised from 750 to  $\geq 2,000$  uM to reduce the likelihood that natural conditions will trigger additional expensive monitoring and to truly indicate an “exceedance” of normal conditions. (C-2)

**Response:** In consideration of comments, and based on best professional judgment, the Department is reverting to the sulfide limit of 3,000 uM utilized in the 2008 general permit as an indicator of benthic condition transitioning from normal to polluted. These values are supported by scientific literature. If sulfide monitoring results exceed 3,000 uM, the permittee is required to conduct further monitoring of benthic conditions to provide data necessary to assess receiving water quality standards, namely the narrative standards for the designated use of habitat.

## 15. RESPONSE TO COMMENTS (cont'd)

- 24) **Comment:** Eliminate the sulfide monitoring requirement for exceedance monitoring since the sampling events/timeframe for collection of sulfides for screening monitoring is essentially the same. (C-1) (C-2)

**Response:** The monitoring structure established in the general permit will not require repeat sampling for sulfide for compliance purposes. The timeframe for sulfide monitoring has been expanded from August 1 – November 15 to July 1 – November 15 to allow necessary scheduling flexibility. This should allow sufficient time to schedule, collect and analyze sulfide samples far enough in advance that if benthic infauna monitoring is required based on the sulfide results, it can be scheduled for the approved monitoring window of August 1 – November 15. Additional sulfide sampling at the time benthic infauna is collected is not required, however, the Department will consider the most recent compliance samples for sulfide when evaluating permit compliance.

- 25) **Comment:** Revise the sulfide value for restocking monitoring from 750 uM to 1,500 uM. (C-1)

**Response:** The purpose of a mixing zone is to allow a reasonable opportunity for dilution, diffusion or mixture of pollutants with the receiving waters before the receiving waters below or surrounding a discharge will be tested for classification violations. Within the mixing zone, the General Permit allows some changes in fauna and physical characteristics of the sediment, but does not contemplate unlimited changes or the loss of all types of organisms. The purpose of restocking monitoring within the mixing zone is to ensure benthic conditions are still capable of supporting marine life and to prevent a cumulative and unchecked impact on habitat. The 2008 general permit established an impact limit of 6,000 uM for sulfide within the mixing zone. The Department is revising the sulfide restocking threshold in the draft general permit from > 750 uM to < 4,000 uM based on best professional judgment of a level, above which, impacts to the benthic community could be excessive and inconsistent with the intent of the mixing zone.

*Subject: Capitella capitata monitoring and limitations*

- 26) **Comment:** Eliminate the exceedance limitations of >25% total abundance composed of *Capitella capitata* for Class SB waters and >50% total abundance composed of *Capitella capitata* for Class SC waters. In the alternative if *Capitella capitata* limitations are retained, change the disjunctive “OR” to the conjunctive “AND.” (C-1)

**Response:** The Department has changed the disjunctive “OR” to the conjunctive “AND” as discussed in Response #17 above.

## 15. RESPONSE TO COMMENTS (cont'd)

27) **Comment:** The draft permit proposes a parameter to which Cooke and the aquaculture industry in Maine has long objected – the use of a total abundance factor that utilizes the presence of *Capitella capitata* and assumes that factor is somehow a reliable indicator of degraded benthic conditions. When *Capitella capitata* represent 75% to <100% of the benthic community at a station and there are very few other species present this is clearly indicative of a degraded condition corresponding to the near-cage.... However, when *C. capitata* represent 25% of the community abundance, the presence of numerous other species clearly shows that the benthic conditions are not nearly as degraded as in the first case. For example, *C. capitata* may account for 10 organisms of 40 in a sample, thus 25% abundance, but the remaining 30 organisms may represent many species in several families representing various functional groups. The assumption, then, that 10 *C. capitata* (25% abundance) represents a seriously degraded condition is false.

Furthermore, as explained above, the Shannon-Weiner Relative Diversity Index already takes into account dominance by any one species or group. The use of % *Capitella* is thus misleading and is also redundant since dominance by *Capitella* is already accounted for in the Shannon-Wiener Relative Diversity Index. Cooke and MAA requested that the Department recognize the science and eliminate the use of *Capitella*. (C-1) (C-2)

**Response:** *C. capitata* is a pollution-tolerant species that responds to organic overloading and is therefore considered as a valuable biological indicator of benthic and associated water quality conditions at net pen facilities. The Department has utilized *C. capitata* since issuance of the initial general permit in 2003. In this permitting action, the Department has revised the manner in which this metric is used for compliance purposes by linking it to sulfide and Shannon-Weiner Relative Diversity Index. The Department believes that this change resolves the commenters' concern which is valid if *C. capitata* is used as a stand-alone metric in evaluating permit compliance.

*Subject: Sampling and monitoring locations*

28) **Comment:** Adjust the sampling locations, as depicted in Appendix B of the draft permit, to sample perpendicular to the ocean current at four representative locations. The draft permit sampling proposal proposes sampling to be done at two locations on either side of the cage system, oriented along the long axis of the cage system, presumably parallel with the predominant current direction, thus four (4) from which a mean value is to be derived.

This proposal emphasizes areas most susceptible to effects from the cage array. As such, the proposed sampling approach depicted above is biased towards a worst case scenario. It is also unrealistic to assume that tidal currents are essentially bi-directional at all sites throughout all cycles over a production period. Furthermore, this proposal incorrectly assumes sediment types across a lease are homogenous. A more holistic approach toward site effects monitoring would take into consideration areas around the site, both parallel

## 15. RESPONSE TO COMMENTS (cont'd)

with and perpendicular to the predominant current direction, thus providing a true representation of the “site” as a whole. (C-1) (C-2)

**Response:** The monitoring strategy suggested by the commenters would effectively factor into the site average results that are taken from sampling stations where deposition from the net pen operation is not expected to occur, or if so, would not be anticipated to represent the areas where benthic impacts are likely to occur. The Department has established that compliance with the general permit limits will be based on site averages rather than on any single monitoring station, and believes this is an appropriate strategy to achieve representative sampling for permit compliance. No changes we made based on this comment.

*Subject: Shannon-Wiener Relative Diversity Index*

- 29) **Comment:** Cooke supports the use of the proper Shannon-Wiener Relative Diversity Index (*J*) as a holistic view of the community by taking into account the number of taxa represented, the number of organisms within each taxa and the total number of organisms. Cooke requests clarification that the Shannon-Wiener to be used is the Shannon-Wiener Relative Diversity Index (*J*). (C-1)

**Response:** The Department has made the requested clarification in the appropriate sections of the general permit.

**Permit Condition: Stocking Notice and Conditions**

- 30) **Comment:** Remove the requirement for prior approval of a stocking management plan by striking all language in Special Condition F.2 of the draft permit including and following this sentence: “The permittee must submit to submit, for review and approval, a stocking management plan.” Instead, add to Appendix A that the permittee, once an exceedance of the permit has been determined, will submit an explanation of the permit exceedance(s). (C-1)

MAA objects to the requirement that a permittee submit for approval a stocking management plan prior to restocking and that any deviation from the approved stocking management plan inherently constitutes a violation of the general permit. MAA asserts that this requirement constitutes direct operational management of a private business by a State agency. MAA further asserts that this is a seizure of the control and management of a private business and as such is beyond the Departments statutory authority and technical expertise. Aside from the constitutional issues involved in such an action, MAA respectfully suggests that the Department may want to reconsider whether it wants responsibility for the operation of a large and technically complicated business worth millions of dollars and in which it has limited technical and business management expertise. MAA would like to stress that as long as the permittee achieves compliance at the monitoring stations established by the Department just outside the mixing zone a

## 15. RESPONSE TO COMMENTS (cont'd)

permittee should be allowed to stock a site and conduct business without direct intervention or management by the Department. (C-2)

**Response:** The Department has revised this section of the draft general permit to eliminate the requirement to submit a stocking management plan for review and approval. The basis for this decision is that it is the permittee's obligation to manage the facility to ensure compliance with permit limitations and conditions. It is not the Department's intention to micromanage operation or management of a facility through stocking plan approvals.

The Department has revised this section of the draft general permit to require routine sulfide monitoring within the mixing zone prior to stocking to ensure sulfide levels, which serve as an indicator of benthic condition, are below 4,000 uM.

It is noted that Standard Condition D.1.(g) of *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, states that "[t]he permittee shall report all instances of noncompliance not reported under paragraphs (d), (e), and (f) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (f) of this section." Information required pursuant to this condition includes a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance." This existing standard condition applies to compliance results obtained by the permittee. Therefore, the Department did not find it necessary to amend Appendix A of the draft general permit to reiterate reporting requirements associated with non-compliance.

### Permit Condition: *Mixing Zone*

31) **Comment:** Consider revising the designated mixing zone from 30 meters to 60 meters. Cooke continues to be concerned with an excessively narrow mixing zone that is not based on sound science. Cooke directs the Department to its "Statement of Concerns with Current Mixing Zone" included as Exhibit A of its December 31, 2013 comment letter. (C-1)

**Response:** The Department finds no compelling new information that suggests the 30-meter mixing zone, which has been in the general permit since 2003, is inappropriate for use in a general permit mechanism. The size of the mixing zone is consistent with other jurisdictions. Site-specific information may be considered as part of a permit application for an individual MEPDES permit, and the Department may establish a mixing zone for individual discharges at the time of

## 15. RESPONSE TO COMMENTS (cont'd)

application for a waste discharge license in accordance with 38 M.R.S.A. § 451. No changes were made based on this comment.

- 32) **Comment:** Revise the monitoring location for restocking monitoring, as depicted in Appendix C of the draft permit, from 15 meters from the edge of the outer net pen to 35 meters from the edge of the outer net pen. Cooke is concerned that the proposed sampling location (15 m) does not correlate to the other monitoring locations (35 m) and that it is required within a designated mixing zone, which the Department has not required of other dischargers where a statutorily authorized mixing zone has been established. MAA rejects the need for sampling within the designated mixing zone. (C-1) (C-2)

**Response:** See consolidated Response #34.

- 33) **Comment:** MAA strongly objects to any inclusion of monitoring within the mixing zone and to the establishment of 1,500 uM sulfide levels within the mixing zone as a condition for restocking of a site. MAA has always objected to the requirement for sampling within the mixing zone and to the size of the mixing zones established in the two previous versions of the MEPDES aquaculture general permit. MAA knows of no other MEPDES permit that requires sampling within the mixing zone other than for the purpose of studying the mixing dynamics of a new discharge and/or establishing the appropriate size of a mixing zone. MAA believes that these studies have been effectively completed under the sampling required in the two previous versions of the MEPDES aquaculture general permit and a number of MEPDES individual permits. MAA respectfully suggests that there is no precedent or basis to require the continued sampling within the mixing zone. Indeed if the Department continues with this requirement the State is intentionally singling out aquaculture businesses for heightened regulatory costs compared to other MEPDES permit holders, a number of whose discharges are much larger and more toxic than aquaculture discharges.

MAA requests the Department strike the requirement to monitor within the mixing zone entirely and merely require permit holders to demonstrate they are back in compliance with the exceedance limitations established in the permit for sulfide, which should be modified to 3,000 uM at 60 meters from the edge of the net pen. (C-2)

**Response:** See consolidated Response #34.

- 34) **Comment:** MAA strongly objects to the fact that the Department has not changed the size of the mixing zone. The existing 30-meter mixing zone was first established in the general permit issued in 2003. This arbitrary distance was based on the preexisting DMR Finfish Aquaculture Monitoring Program (FAMP) program that was designed around some of the sheltered, shallow sites chosen during the early start up years of the salmon farming industry. It is interesting to note that at that time the standard cages used in the industry were 10 meters in diameter. The current mixing zone is actually smaller than the diameter of most cages (35 meters) currently used in the industry. There is little or no

## 15. RESPONSE TO COMMENTS (cont'd)

technical/scientific justification or other rationale for the selection of the 30 meter limit in the permit or the fact sheet for the original 2003 permit.

Extensive environmental sampling and monitoring clearly indicate that a 30-meter mixing zone is inadequate for aquaculture operations in Maine marine ecosystems. MAA suggested that the mixing zone should be expanded to a minimum of 60 meters. (C-2)

**Response:** The Department is not prohibited from requiring sampling within the mixing zone. The mixing zone allows a reasonable opportunity for dilution, diffusion and mixture of pollutants with the receiving waters before water quality standards are measured. To ensure the discharge does not cause or contribute to conditions that are lethal to passing organisms indigenous to the receiving water within the mixing zone, monitoring for sulfides is being required prior to restocking as an indicator of benthic conditions. See also Response #31. No changes were made based on this comment.

### Permit Condition: *Operations and Maintenance (O&M) Plan*

35) **Comment:** Eliminate the permit requirement(s) that the permittee share proprietary feed management practices in any Operation & Maintenance Plan that may be requested by the Department and placed in the public domain. Alternatively, Cooke requests that the Department adopt protections similar to those utilized by NOAA and MeDMR to protect the proprietary nature of the feed management plans and/or practices of the aquaculture company permittees. Such protection could be adopted by statute or rule by adoption of confidentiality provisions that prevent such proprietary information from reaching the public domain. (C-1)

**Response:** 40 CFR 451.21 establishes effluent limitations attainable by the application of the best practicable control technology currently available (BPT). Conditions established in the general permit incorporate the requirements of these best management practices, one of which is that the permittee employ efficient feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth. The Department has revised the Operations and Maintenance Plan requirements to, in pertinent part, "The O&M Plan must include provisions to maintain and implement all best management practices prescribed by this General Permit. The O&M Plan must identify the existence of and date of a feed management plan detailing the permittee's feeding strategies and practices for each growing cycle. The feed management plan must be made available to Department personnel for review upon request." A description of the system(s) proposed for use at the facility to dispense and monitor the consumption of feed and to detect the loss of uneaten feed is also required as part of the NOI information.



## 15. RESPONSE TO COMMENTS (cont'd)

### Permit Condition: *Use of Drugs for Disease Control*

36) **Comment:** The use of therapeutants in aquaculture operations is pervasively regulated by the United States Food and Drug Administration. Several of the provisions repeated in the draft permit include provisions that require studies and investigation approaches that are necessarily pursued as part of Investigational New Animal Drug (INAD) review by U.S. Federal Drug Administration (FDA). Cooke requests that the regulation of drugs for disease control in the general permit track, but not exceed, the requirements imposed by federal authorities, including the FDA.

Many of the provisions repeated in the draft permit include provisions that require studies and investigation approaches that are routinely conducted as part of full registration package for a therapeutants or as part of an INAD review by the FDA. Both of these processes include review by the USEPA with respect to potential environmental impacts and risks associated with the use of the therapeutants being considered. MAA requested that the Department not require duplicative studies or monitoring requirements that exceed the federal requirements. (C-1) (C-2)

**Response:** For FDA approved drugs and extralabel drug use, the draft general permit is conditioned such that the Department may require sediment monitoring for a specific drug or metabolite(s) if data or literature adequately characterizing the environmental fate of the drug or metabolite(s) is not available. For INADs, the draft general permit is conditioned such that the permittee must submit, for review and approval, an environmental monitoring and evaluation program that at a minimum describes sampling strategies, analytical procedures, evaluation techniques and a timetable for completion of the program. The program must consider the possible effects on the water column, benthic conditions and organisms in or uses of the surrounding waters.

The Department agrees with the commenters that duplicative effort to obtain environmental data is wasteful and unnecessary. Therefore, the final general permit has been revised to include a provision that currently available data or literature that adequately characterizes the environmental fate of the INAD and its metabolite(s) may be proposed for consideration in determinations of environmental monitoring and evaluation programs.

### Permit Condition: *Protection of Atlantic Salmon*

37) **Comment:** Conditions in the draft permit related to the protection of Atlantic salmon only applied to salmon farms. While these conditions for the most part are applicable to raising Atlantic salmon, NMFS and USFWS stated that it would be beneficial to include provisions for a Containment Management System for all finfish reared in the marine environment. Most of the other finfish species currently being reared or proposed (cod, halibut, etc.) would not affect salmon, but could have both ecological and genetic effects to the native populations of groundfish found in the Gulf of Maine should they escape. It

## 15. RESPONSE TO COMMENTS (cont'd)

would be best to contain all farmed origin fish within the net pens and would be beneficial to have a "standard" for farmers to utilize to achieve the best results. Maine Aquaculture Association Code of Containment would be a good starting point for minimal standards and is referenced in the conditions for the protection of Atlantic salmon. (C-3) (C-4)

**Response:** The National Pollutant Discharge Elimination System Memorandum of Agreement Between the State of Maine and the United States Environmental Protection Agency, finalized on January 12, 2001, at Section III.10 *and Waste Discharge License Conditions*, 06-096 CMR 523(10)(b) (effective January 12, 2001) provide that if the Department is advised in writing by NMFS or USFWS that imposition of specific conditions in a permit is necessary to avoid substantial impairment of fish, shellfish or wildlife resources, the Department shall include the specific conditions in the permit to the extent that they are determined necessary to carry out the provisions of the Clean Water Act.

The final general permit has been revised by expanding applicability of conditions for protection of Atlantic salmon to all facilities covered under the general permit, rather than restricting it to only those facilities that rear Atlantic salmon.

38) **Comment:** MeDMR provided updated language and protocol for the escape reporting condition that was vetted among the agencies having regulatory oversight on monitoring escaped fish to ensure protection of Atlantic salmon. (C-7)

**Response:** The Department incorporated the proposed language, with revisions for clarity and consistency, as follows.

The permittee must notify by electronic mail (e-mail) the Escape Reporting Contact List provided in this subsection of any known or suspected escape of 25% or more of a cage population and/or more than 50 fish with an average weight of two (2) or more kilograms each ( $\geq 2$  kg) within 24 hours of becoming aware of the known or suspected loss. The permittee must include in its e-mail notification the following information: 1) DMR site identification; 2) site location (town and waterbody); 3) number of cages on site; 4) number of cages subject to loss; 5) date of event (or window of possible dates if exact date is unknown); 6) time of event (if known or specify "unknown"); 7) species (including strain); 8) estimated average weight; 9) age of escaped fish; 10) number of escaped fish (or if exact number is not possible, an estimate); 11) medication profile; 12) details of the escape; 13) corrective action(s) taken or planned; 14) and a contact person (including

## 15. RESPONSE TO COMMENTS (cont'd)

phone number) for the facility which is subject of the known or suspected escape.

This agency contacts on this list may be revised by the state and/or federal agencies by provision of written notification to the permittee and the other agencies. Upon notice of any such change the permittee must notify all persons on the revised list in the same manner as provided in this protocol.

### **Escape Reporting Contact List:**

*Army Corps of Engineers*

Maine Project Office; Jay Clement;

[Jay.L.Clement@usace.army.mil](mailto:Jay.L.Clement@usace.army.mil)

*Maine Department of Environmental Protection*

Commissioner Patricia Aho, [patricia.aho@maine.gov](mailto:patricia.aho@maine.gov), or current Commissioner

*Maine Department Marine Resources*

Policy Development Specialist; Chris Vonderweidt;

[chris.vonderweidt@maine.gov](mailto:chris.vonderweidt@maine.gov)

Secretary to the Commissioner; Jessica McKay;

[jessica.mckay@maine.gov](mailto:jessica.mckay@maine.gov)

Sea-Run Fisheries and Habitat Division Director; Oliver

Cox; [oliver.n.cox@maine.gov](mailto:oliver.n.cox@maine.gov)

*National Marine Fisheries Service*

Maine Field Station; David Bean; [david.bean@noaa.gov](mailto:david.bean@noaa.gov)

*United States Fish & Wildlife Service*

Maine Field Office; Wende Mahaney;

[wende\\_mahaney@fws.gov](mailto:wende_mahaney@fws.gov)

- 39) **Comment:** USEPA Region 1 stated, with respect to monitoring within the mixing zone, “Does the permit require monitoring adequate to assess whether unchecked degradation to the benthic conditions under and beyond the net-pens is prevented? Need to discuss concerns with the proposed timing and location of monitoring.” (C-8)

**Response:** The Department followed up with USEPA Region 1 by way of an April 3, 2014 phone conference. During the phone conference, USEPA Region 1 requested that the location of monitoring within the mixing zone be revised from 15 meters from the edge of the net pen to 5 meters, which is consistent with the 2008 general permit, and that the timing of mixing zone monitoring should be concurrent with monitoring outside the mixing zone. The Department does not anticipate significant differences in monitoring results between samples collected

## 15. RESPONSE TO COMMENTS (cont'd)

at 5 meters and 15 meters and has made the requested change to satisfy USEPA Region 1's concern with this condition of the general permit.

The Department added the following to Special Condition I:

3. Monitoring for sulfide at 5 meters must be conducted at a minimum frequency of once per growing cycle during the period of July 1 – November 15 during the year of maximum biomass for the facility. Results may be used to demonstrate compliance with the restocking threshold of 4,000 uM. Results greater than 4,000 uM do not constitute a violation of this General Permit.

As a result of this revision, the Department revised the restocking conditions at Special Condition F to specify sample results from mixing zone monitoring may be used to satisfy the restocking condition.

- 40) **Comment:** Cooke stated, “Section F.2. Restocking; request that MDEP restore Monitoring and Evaluation approach and delete Restocking Condition in the Permit. In Section F.2, the recently issued draft permit incorporates a new change that is ‘based on a request from EPA to ensure area of greatest anticipated impact within the mixing zone is evaluated.’ The Permit Language then is revised to impose a new condition giving the Department authority to impose conditions for restocking fish at a facility that merely exceeds the sulfide limitation within the Mixing Zone. This approach would seem to be more appropriately addressed in the Fact Sheet rather than a new permit condition (since it extends beyond evaluation of the conditions under the cages and within the Mixing Zone). The draft general permit already contains a restocking threshold for sulfides to ensure fish are not restocked before bottom conditions indicate the benthic conditions are not polluted and are ‘capable of supporting the designated use of habitat for estuarine and marine life’”. (C-9)

**Response:** The revision made to Special Condition F.2 of the revised draft permit ensures the intent of the mixing zone to provide a reasonable opportunity for dilution, diffusion and mixture of pollutants with the receiving waters before water quality standards are measured while protecting impacts on aquatic life from unchecked degradation is appropriate and adequate. No changes were made based on this comment.

- 41) **Comment:** Cooke stated, “Section I.3. Sulfide Threshold and Sampling Location for Monitoring during the Maximum Biomass Period. Although the prior permits have used a value of 6,000 uM as the limit for sulfides at 5m, and the prior Draft in this renewal round has used 4000 uM at 15m, this latest Draft proposes a limit of 4,000 uM at 5 m. Specifically, the precedent was previously set in the 2003 original General Permit, and

## 15. RESPONSE TO COMMENTS (cont'd)

then again in the 2008 and 2011 versions that a 6,000 uM sulfide level is considered the threshold level of anoxia; this value is supported by essentially all scientific literature.

Also, as addressed in its previous comments, Cooke argues that sampling for permit compliance should not take place within the statutorily authorized Mixing Zone (similar to Mixing Zone practice with other CWA discharge permits). Indeed, the current draft has set the sampling stations at 35m instead of the original 30m sample station to address concerns with sampling within the mixing zone.

During production, given tidal currents and storm action, cage shifts occur and a sampling location of 5m would be, sampling directly under the cages; it is not an exact science working under those conditions. Specifically, within a tidal cycle, every cage system on every site will have the shadow of a cage cover the 5m sampling station for a period of time. By design cage and mooring systems are not static. Incorporation of the various components are engineered to move/give in reaction to forces on the entire system. Energy on a system is relieved and dispersed through chain catenary at each end of a grid section, each rope component (anchor rodes, gridlines and bridles) has its own inherent stretch and memory, and circular cage design coupled with High Density Polyethylene materials provides surface elasticity. This array in and of itself lends to movement that exceeds 5m. Couple that with significant tidal depth changes (a trigonometry calculation alone will show this), current and net deflection it is easy to determine cages move greater than 5m from a fixed point on the ocean substrate.

With that said, we understand EPA's concern with evaluating conditions within the sediment mixing zone. Cooke requests that the Department make the same adjustment to the 5m location back to 15m to address concerns with sampling directly under the cages. In summary, providing no buffer from immediate and direct production effects within the Mixing Zone(5m) but still requiring a sulfide threshold (4,000 uM) that provides some 2,000 uM of buffer from truly anoxic conditions will not be workable. Consistent with this comment and the changes to the current Draft requested immediately above, Cooke also requests that the 5m location in Appendix C on page 29 be changed to 15 meters." (C-9)

**Response:** The Department believes monitoring at 5 meters rather than 15 meters more accurately addresses the ability to assess conditions within the mixing zone at the area where highest organic loading would typically occur. USEPA Region 1 strongly encouraged the Department to make this change. The Department believes selecting an alternate location, such as 15 meters, is arbitrary and not able to be strongly defended. The Department reiterates that the sulfide results from the 5 meter sample stations are not to determine compliance with numeric permit limitations and will not be considered permit violations. No changes were made based on this comment.

*End of document*