STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

December 2, 2013

TO: Interested Parties of Record

Sent via electronic mail
Delivery confirmation requested

RE: Proposed Draft General Permit - Net Pen Aquaculture

Dear Interested Party:

Attached is a proposed draft General Permit renewal which the Department proposes to issue as final documents after opportunity for review and comment. By transmittal of this letter, you are provided with an opportunity to comment on the proposed draft General Permits and their conditions (special conditions specific to this permit are enclosed; standard conditions applicable to all permits are available upon request). If either contains errors, please respond to the Department so that changes can be considered.

The proposed General Permit will renew General Permit – Atlantic Salmon Aquaculture issued by the Department on September 22, 2008. By copy of this letter, the Department is requesting comments on the proposed draft General Permits from various state and federal agencies and from any other parties who have notified the Department of their interest in this matter.

If you have any questions regarding the matter, please feel free to contact me.

All comments must be received in the Department of Environmental Protection office on or before the close of business **Thursday, January 2, 2014.** Failure to submit comments in a timely fashion will result in the final document being issued as drafted. Comments in writing should be submitted to my attention at the following address:

Maine Department of Environmental Protection
Bureau of Land & Water Quality
Division of Water Quality Management
17 State House Station
Augusta, ME 04333-0017
bill.hinkel@maine.gov

Sincerely,

Bill Hinkel
Division of Water Quality Management
Bureau of Land and Water Quality
bill.hinkel@maine.gov
ph: 207.485.2281

Enc.

ec: Jennifer Robinson, Cooke Aquaculture
David Miller, Cooke Aquaculture
Donald Eley, FOBHB
Ivy Frignoca, CLF
Kathleen Leyden, DACF
Environmental Coordinator, MDIFW
John Lewis, MeDMR
Chris Vonderweidt, MeDMR
Oliver Cox, MeDMR
Michelle Mason, MeDMR
Gail Wippelhauser, MeDMR
Brian Pitt, USEPA
Alex Rosenberg, USEPA
David Pincumbe, USEPA
Olga Vergara, USEPA
Ralph Abele, USEPA
Jennie Bridge, USEPA
David Bean, NOAA
Wendy Mahaney, USFWS
Max Tritt, NMFS
Trevor White, Passamaquoddy Tribe at Indian Township
Dale Mitchell, Passamaquoddy Tribal Government
Mick Kuhns, MDEP
Gregg Wood, MDEP
Sterling Pierce, MDEP
Angela Brewer, MDEP
Clarissa Trasko, MDEP
Stacie Beyer, MDEP
Matthew Young, MDEP
Lori Mitchell, MDEP

STATE OF MAINE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

General Permit – Net Pen Aquaculture

Maine Pollutant Discharge Elimination System Permit
Maine Waste Discharge License

Bureau of Land and Water Quality

EFFECTIVE DATE

MEPDES Permit #MEG130000
Waste Discharge License #W009020-6H-D-R

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL PERMIT FOR NET PEN AQUACULTURE

Table of Contents

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

NET PEN AQUACULTURE		)	MAINE POLLUTANT DISCHARGE
GENERAL PERMIT		)	ELIMINATION SYSTEM PERMIT
STATE OF MAINE		)	AND
#MEG130000		)	WASTE DISCHARGE LICENSE
#W009020-6H-D-R	**APPROVAL**	)	**RENEWAL**

In compliance with the *Federal Water Pollution Control Act*, Title 33 U.S.C. § 1251, *Conditions of licenses*, 38 M.R.S.A. § 414-A, *General Permits for Certain Wastewater Discharges*, 06-096 CMR 529 (last amended June 27, 2007), and applicable regulations, the Maine Department of Environmental Protection (Department) has considered the renewal of Maine Pollutant Discharge Elimination System (MEPDES) General Permit #MEG130000 / Maine Waste Discharge License (WDL) #W009020-5Y-C-R, which was issued on September 22, 2008 for a five-year term, with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

PROCEDURAL AND REGULATORY SUMMARY

On January 12, 2001, the 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.

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 the requirements of these BMPs.

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.

PROCEDURAL AND REGULATORY SUMMARY (cont'd)

Between 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. 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.

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.

1. Expanding applicability from only Atlantic salmon to all finish species that may legally be cultivated in net pens in Maine.

2. Carrying forward exclusions on area of coverage, current velocity and stratification.

3. Eliminating the water column mixing zone as an unnecessary provision of the previous permit.

4. Carrying forward the 30-meter sediment mixing zone.

5. Eliminating video/photographic monitoring and reporting requirements.

6. 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.

7. Eliminating the requirement to maintain reference sites based on the revised sediment and benthic monitoring structure.

8. Establishing a requirement to demonstrate compliance with sulfide standards prior to restocking a facility that exceeded a General Permit limitation.

9. Carrying forward conditions for protection of Atlantic salmon.

10. Restructuring several components of the pervious General Permit under a new condition entitled, Best Practicable Treatment, for consistency with federal requirements and improved organization.

11. Carrying forward terms and conditions for use of drugs for disease control.

12. Establishing a requirement to maintain a current comprehensive operations and maintenance plan for each facility.

CONCLUSIONS

Based on the findings in the attached **PROPOSED DRAFT** Fact Sheet, dated December 2, 2013, and subject to the special and standards conditions that follow, the Department makes the following **CONCLUSIONS**:

1. The discharge from a net pen aquaculture facility covered under this General Permit, either by itself or in combination with other discharges, will not lower the quality of any classified body of water below such classification.

2. The discharge from a net pen aquaculture facility covered under this General Permit, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with state law.

3. The provisions of the State's antidegradation policy, *Classification of Maine waters*, 38 M.R.S.A. § 464(4)(F), will be met, in that:

   (a) Existing in-stream water uses and the level of water quality necessary to protect and maintain those existing uses will be maintained and protected;

   (b) Where high quality waters of the State constitute an outstanding national resource, that water quality will be maintained and protected;

   (c) The standards of classification of the receiving water body are met or, where the standards of classification of the receiving water body are not met, the discharge will not cause or contribute to the failure of the water body to meet the standards of classification;

   (d) Where the actual quality of any classified receiving water body exceeds the minimum standards of the next highest classification that higher water quality will be maintained and protected; and

   (e) Where a discharge will result in lowering the existing water quality of any water body, the Department has made the finding, following opportunity for public participation, that this action is necessary to achieve important economic or social benefits to the State.

4. The discharge from a net pen aquaculture facility covered under this General Permit is subject to effluent limitations that require application of best practicable treatment as defined in 38 M.R.S.A. § 414-A(1)(D).

ACTION

Based on the findings and conclusions as stated above, the Department APPROVES the renewal of General Permit #MEG130000, *Net Pen Aquaculture General Permit*, for the discharge of certain pollutants resulting from the operation and maintenance of net pen aquaculture facilities to Class SB or SC waters located 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, SUBJECT TO THE ATTACHED CONDITIONS, including:

1. The attached Special Conditions, including any effluent limitations and monitoring requirements.

2. *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, copy attached.

3. This General Permit and the authorization to discharge become effective upon the date of signature below and expire at midnight five (5) years from the effective date. Prior to expiration of this General Permit, the Department must make a determination if it is to be renewed, and, if so, must 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. [*Maine Administrative Procedure Act*, 5 M.R.S.A. § 10002, 06-096 CMR 2(21)(A), and 06-096 CMR 529(3)(c)]

DONE AND DATED AT AUGUSTA, MAINE THIS _____DAY OF _____, 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____
PATRICIA W. AHO, Commissioner

Date filed with Board of Environmental Protection _____

Date of Public Notice:September 26-27, 2013
This Order prepared by Bill Hinkel, BUREAU OF LAND & WATER QUALITY

SPECIAL CONDITIONS

A. AUTHORITY

A permit is required for the direct or indirect discharge of pollutants to waters of the State and United States. *Waste discharge licenses*, 38 M.R.S.A. § 413(1) and *Federal Water Pollution Control Act*, Title 33 U.S.C. § 1251, *et seq*. The Department is authorized by the United States Environmental Protection Agency (USEPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine. 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. 06-096 CMR 529. The Department has determined that discharges resulting from net pen aquaculture facilities located within the geographic area of coverage and that conform to the applicability and coverage standards established herein may be authorized by a general permit.

B. DEFINITIONS

In addition to the definitions found in *Definitions in the Waste Discharge Permitting Program*, 06-096 CMR 520 (effective January 12, 2001) and in the waste discharge program and water classification laws, the following terms have the following meanings when used in this General Permit.

1. **Drug.** "Drug" means any substance defined as a drug in section 201(g)(1) of the *Federal Food, Drug and Cosmetic Act*, 21 U.S.C. § 321.

2. **Extralabel drug use**. "Extralabel drug use" means actual use or intended use of a drug in an animal in a manner that is not in accordance with the approved labeling. This includes, but is not limited to, use in species not listed in the labeling, use for indications (disease or other conditions) not listed in the labeling, use at dosage levels, frequencies, or routes of administration other than those stated in the labeling, and deviation from the labeled withdrawal time based on these different uses. *Federal Food, Drug, and Cosmetic Act*, 21 CFR Part 530.

3. **Growing cycle.** "Growing cycle" means a period of time between the date when fish are stocked at a facility and the date when those fish, other than fish designated as brood stock, have been harvested from the facility.

4. **Investigational New Animal Drug (INAD).** "Investigational new animal drug" means a drug for which there is a valid exemption in effect under section 512(j) of the *Federal Food, Drug, and Cosmetic Act*, 21 U.S.C. 360b(j), to conduct experiments. INADs are those drugs for which FDA has authorized use on a case-by-case basis to allow a way of gathering data for their approval process.

5. **Maximum rearing density.** "Maximum rearing density" means the maximum kilograms of fish per cubic meter of net pen volume.

SPECIAL CONDITIONS

B. DEFINITIONS (cont'd)

6. **Net pen system**. "Net pen system" means a stationary, suspended or floating system of nets, screens, or cages in open waters of the State and located within the boundaries of a lease granted by the Department of Marine Resources. Net pen systems typically are located along a shore or pier or may be anchored and floating offshore. Net pens and submerged cages rely on tides and currents to provide a continual supply of high-quality water to the animals in production. 40 CFR Part 451.2(j).

7. **Net pen aquaculture facility or facility**. "Net pen aquaculture facility" or "facility" means a net pen system within the boundaries of a single lease granted by the Department of Marine Resources for the purpose of rearing finfish, including, but not limited to, Atlantic salmon.

8. **New facility**. "New facility" means any net pen aquaculture facility that has not been previously permitted by the Department for net pen aquaculture.

9. **Notice of Intent or NOI**. "Notice of Intent" or "NOI" means a notification of intent to seek coverage under this General Permit made by the owner or operator of a net pen aquaculture facility to the Department on a form provided by the Department.

10. **Transgenic salmonids.** "Transgenic salmonids" means species of the genera *Salmo*, *Oncorhynchus* and *Salvelinus* of the family Salmonidae and bearing, within their DNA, copies of novel genetic constructs introduced through recombinant DNA technology using genetic material derived from a species different from the recipient, and including descendants of individuals so transfected.

C. APPLICABILITY AND ELIGIBILITY

Only net pen aquaculture facilities that conform to the following conditions for applicability and coverage are eligible for coverage under this General Permit.

1. **Area of coverage**. This General Permit covers net pen 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 and are located in the following areas:

   Class SB or SC waters 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.

2. **Current velocity**. Each facility covered by this General Permit must be located in an area that has an average current velocity, as measured over at least one tidal cycle under representative oceanographic conditions, of not less than 5 cm per second at a point one half of the distance between the bottom of the net pens and the sea floor.

SPECIAL CONDITIONS

C. APPLICABILITY AND ELIGIBILITY (cont'd)

3. **Stratification of the water column**. Facilities covered by this General Permit must not be located in waters that demonstrate significant, persistent vertical stratification during summer months based on Department best professional judgment. In determining if the water column is stratified, the Department will evaluate results on a site-specific basis considering duration and magnitude of vertical temperature and density changes in the water column.

D. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE

1. **Notice of Intent (NOI)**. The owner or operator of a net pen aquaculture facility, as an applicant, and seeking coverage under this General Permit must submit a completed NOI to the Department for review and approval. NOI forms must be mailed or hand-delivered to:

Department of Environmental Protection
Bureau of Land and Water Quality
Division of Water Quality Management
Permitting Section
17 State House Station
Augusta, ME 04333-0017

The Department reserves the right to request additional information from the applicant based on review of the NOI. Permitting information, forms, and Augusta office directions may be obtained by contacting the Department's Waste Discharge Permitting Unit at 1-207-287-7688 or toll-free at 1-800-452-1942. Additionally, the General Permit, associated fact sheet and other forms are available for review and download at: http://www.maine.gov/dep/water/wd/gp.html.

2. **NOI information**. A complete NOI must contain the following information.

a) The legal name, address and telephone number of the owner and operator of the facility.

b) The name and location of the facility, including the town and map coordinates.

c) A chart showing the exact location, mean low water depth, and configuration of pen mooring systems and support platforms associated with the facility.

d) The directions of prevailing currents and average current velocity at the facility.

e) A description of the number, type, size and configuration of net pens proposed for use at the facility, along with associated structures, and the minimum clearance to the sea floor.

f) The maximum number and total weight of fish to be contained in the facility at any time.

g) The maximum rearing density per net pen and total for the facility, excluding empty net pens, in kilograms of fish per cubic meter of net pen volume.

SPECIAL CONDITIONS

D. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE (cont'd)

h) The maximum total amount per month and composition of fish feed, including trace ingredients, proposed for use at the facility.

i) A list of all drugs proposed for use at the facility, and the duration, route of administration and concentration of each application.

j) A list of disinfectants, biocides, anti-fouling agents or other similar compounds proposed for use at the facility.

k) 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.

l) A diagram showing the proposed sampling locations with unique and consistent labels and GPS coordinates to meet testing requirements of this General Permit.

m) Baseline monitoring data as required by Special Condition G.

n) A statement that a current Operation and Maintenance (O&M) Plan has been developed for the facility.

o) Evidence of title, right or interest (TRI) in all of the property that is proposed for development or use in accordance with 06-096 CMR 2(11)(D). Examples of TRI include 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.

p) Evidence that public notice of intent to file a NOI and a list of abutters to whom notice was provided in accordance with 06-096 CMR 2(14).

q) For corporations, a *Certificate of Good Standing* or a statement signed by a corporate officer affirming that the corporation is in good standing.

r) The signature of an authorized person in accordance with *Applications for Waste Discharge Licenses*, 06-096 CMR 521(5) (effective January 12, 2001).

Failure to submit all required NOI information may result in finding the NOI incomplete for processing and may delay processing or result in denial of the NOI.

SPECIAL CONDITIONS

D. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE (cont'd)

3. **Decisions.**

   a) **Effective date of coverage**. The Department must notify an applicant of coverage under this General Permit within 31 calendar days of receipt of each complete NOI or date of public notice publication, whichever is later, as to whether or not coverage for the specific discharge is permitted. If the Department does not notify the applicant within 31 calendar days of this time, the NOI is accepted and coverage is granted. In the event coverage is not granted, the Department must notify the applicant of the reason(s) for not granting coverage. Denial of coverage under this General Permit is not appealable to the Board of Environmental Protection and is not final agency action. The approval of coverage under this General Permit is appealable in accordance with 06-096 CMR 2(24)(B).

   b) **Individual permit coverage**. The Department may require, or an interested party may request for consideration, that a facility covered under this General Permit obtain an individual MEPDES permit for any of the reasons specified at 06-096 CMR 529(2)(b)(3)(i)(A-G). The owner or operator of a net pen facility eligible for coverage under this General Permit may request to be excluded from this General Permit and instead apply for an individual MEPDES permit as provided at 06-096 CMR 529(2)(b)(3)(iii).

4. **Effective term of coverage.** The term of this General Permit is five years. Coverage under this General Permit will be continued from year to year provided payment of an applicable annual fee pursuant to *Maine Environmental Protection Fund*, 38 M.R.S.A. § 353-B, and that there are no significant changes in the facility or its operation as described in the NOI.

   Prior to expiration of this General Permit, the Department must 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 must 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 new General Permit.

   In the event that the ownership of a facility is transferred to a new owner, coverage under this General Permit may be transferred by the new owner notifying the Department in writing, provided the new owner proposes no significant changes in the facility or its operation. The notice must include documentation that the new owner has: 1) a *Certificate of Good Standing* or a statement signed by a corporate officer affirming that the corporation is in good standing; 2) title, right or interest in the facility; and 3) the technical and financial capacity to comply with this General Permit. Such notification must be made within two weeks of the transfer. If increases or significant changes in the discharge are proposed, a new NOI must be filed.

SPECIAL CONDITIONS

D. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE (cont'd)

5. **Changed conditions**. In the event a permittee covered by this General Permit proposes to make significant changes in the nature or scope of the operations of facilities described in a NOI previously approved, the permittee must notify the Department as soon as becoming aware of and before implementing such changes. Based on its evaluation of the proposed changes, the Department may require the submittal of a new NOI or that an individual permit be obtained. Reportable changes include, but are not limited to, relocated or new mooring systems, additional net pens, or more fish or density than indicated in the approved NOI.

E. AUTHORIZED DISCHARGES

A permittee covered under this General Permit is authorized to discharge: 1) only in accordance with the permittee's Notice of Intent; 2) only in accordance with the terms and conditions of this General Permit; and 3) other pollutants incidental to the normal and proper operation of the facility, including, but not limited to, fish excrement, fish scales, fish carcasses unable to be retrieved, and the leaching of treatment compounds used on nets to limit marine growth, provided such discharges do not cause or contribute to a violation of an applicable water quality standard or condition of this General Permit. Discharges of pollutants from any other point source are not authorized under this General Permit, and must be reported in accordance with Standard Condition B(5), *Bypasses*, of *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, attached to this General Permit.

F. STOCKING NOTICE AND CONDITIONS

1. **Stocking notice.** ***No later than March 1 of each calendar year***, the permittee must notify the Department of its intent to stock fish (brood or otherwise) any facilities that calendar year.

2. **Stocking following exceedance of exceedance monitoring limit**. If restocking monitoring is required by this General Permit, fish may not be stocked at the facility until the permittee demonstrates to the Department's satisfaction that sulfide levels within the mixing zone are equal to or less than 1,500 uM based on the mean of all samples. See Appendix C of this General Permit for sampling locations. The permittee must submit to submit, for review and approval, a stocking management plan. The stocking management plan must include a review of the facility's past operations, a plan to modify operations at the facility to ensure exceedence limitations are met during the next growing cycle, and an implementation schedule. Modification of operations may include changes in feed type or method, modifying the facility layout, and/or fallowing the site for an extended period of time. The permittee must adhere to all terms and conditions of an approved stocking management plan. Failure to adhere to any term or condition of an approved stocking management plan constitutes a violation of this condition of the General Permit.

SPECIAL CONDITIONS

G. BASELINE DATA

Prior to commencing operation at a site not used for net pen aquaculture in the previous five (5) years, the owner or operator of a facility must conduct baseline monitoring in accordance with a plan approved by the Department. Information must include the location of the site, water depth, temperature, salinity, current flow, dissolved oxygen profiles, bottom type(s), and all data required under Exceedance Monitoring established in this General Permit.

H. MIXING ZONE

Pursuant to *Enforcement generally*, 38 M.R.S.A. § 451, the Department may establish a mixing zone for any discharge. This General Permit carries forward the mixing zone established in Board Order #MEG130000 issued on June 19, 2003 to allow a reasonable opportunity for dilution, diffusion and mixture of pollutants with the receiving waters before water quality standards are measured. 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.

The permittee may request, and the Department may, at its discretion, approve, a shift in the location of the mixing zone to reflect the effect of ocean current unique to a specific site, provided that the shift does not result in an expansion in size from the designated mixing zone.

Within the designated mixing zone, the discharge must not cause or contribute to conditions that are lethal to passing organisms indigenous to the receiving water.

I. SEDIMENT AND BENTHIC MONITORING REQUIREMENTS AND LIMITATIONS

The permittee must conduct sediment and benthic monitoring as specified in this section. See Appendix A of this General Permit for conditions of sediment and benthic monitoring requirements.

Table H.1. Screening Monitoring and Action Level: Conducted 1/growing cycle during August 1 – November 15 to coincide with maximum biomass.

Parameters	Action Level	Sample Location	Data Submission Deadline
Sulfide	Exceedance monitoring required when mean of all samples >750 uM	A, B, C, and D at edge of mixing zone (35 m from net pen) See Appendix B	December 31 of sampling year

SPECIAL CONDITIONS

I. SEDIMENT AND BENTHIC MONITORING REQUIREMENTS AND LIMITATIONS (cont'd)

Table H.2. Exceedance Monitoring and Limitations: Concurrent with Screening Monitoring or August 1–November 15 following an exceedance of the Screening Monitoring sulfide action level.

Parameters	Limitations	Sample Location	Data Submission Deadline
CLASS SB	Shannon-Wiener Diversity Index < 0.5 based on the mean of all samples across site OR >25% total abundance composed of *Capitella capitata* based on the mean of all samples across site OR Sulfide ≥1,500 uM based on the mean of all samples across site	A, B, C, and D at edge of mixing zone (35 m from net pen) See Appendix B	By March 1 of the following year
CLASS SC	Shannon-Wiener Diversity Index < 0.4 based on mean of all samples across site OR >50% total abundance composed of *Capitella capitata* based on the mean of all samples across site OR Sulfide ≥1,500 uM based on mean of all samples across site		
Species abundance and species richness	Report/0.1 m^2		
Total organic carbon	Report mg/g		
Percent solids	Report %		
Sand, silt, clay, gravel	Report %		

Table H.3. Restocking Monitoring: Conducted prior to stocking following exceedance of Table H.2 permit limit.

Parameters	Condition for restocking	Sample Location	Data Submission Deadline
Sulfide	≤1,500 uM based on the mean of all samples across site	AA, BB, CC, and DD within sediment mixing zone See Appendix C	Not less than 14 days prior to proposed restocking

SPECIAL CONDITIONS

I. SEDIMENT AND BENTHIC MONITORING REQUIREMENTS AND LIMITATIONS (cont'd)

Outside the designated mixing zone, discharges from the facility must not cause or contribute to a violation of water quality standards, including the following narrative standards:

1. The permittee must not discharge pollutants that cause a visible oil sheen, foam, or floating solids at any time that would impair the uses designated by the classification of the receiving waters.

2. 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.

3. The permittee must not discharge pollutants that cause visible discoloration or turbidity in the receiving waters that causes those waters to be unsuitable for the designated uses and characteristics ascribed to their class.

4. The permittee must not discharge pollutants that lowers the quality of any classified body of water below such classification, or lowers the existing quality of any body of water if the existing quality is higher than the classification.

J. BEST PRACTICABLE TREATMENT

These conditions are consistent with effluent limitations attainable by the application of the best practicable control technology currently available (BPT) prescribed by 40 CFR Part 451.21.

1. **Feed management.** The permittee must 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. These strategies must minimize the accumulation of uneaten food beneath the pens through the use of real-time feed monitoring, including devices such as video cameras, digital scanning sonar, and upweller systems; monitoring of sediment quality beneath the pens; monitoring of benthic community quality beneath the pens; capture of waste feed and feces; or other good husbandry practices approved by the Department.

2. **Waste collection and disposal.** The permittee must collect, return to shore, and properly dispose of all feed bags, packaging materials, waste rope, netting and other solid waste.

3. **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.

4. **Carcass removal.** The permittee must remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the State.

SPECIAL CONDITIONS

J. BEST PRACTICABLE TREATMENT (cont'd)

5. **Materials storage.** The permittee must ensure proper storage of drugs, pesticides and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the State. The permittee must implement procedures for properly containing, cleaning, and disposing of any spilled material.

6. **Maintenance.** The permittee must inspect the net pen facility on a routine basis in order to identify and promptly repair any damage and conduct regular maintenance of the net pen facility in order to ensure that it is properly functioning. The permittee must keep on-site, for Department inspection, records of net changes, inspections and repairs.

7. **Recordkeeping.** The permittee must maintain and report monthly, using a method and on a form approved by the Department, the following information.

   a) The number of net pens in use, including type, size (diameter and depth) and volume.
   b) The number of months each net pen has been stocked.
   c) The average weight of and total number of fish in each net pen.
   d) The total amount of feed added to each net pen.

   The report is due by the last day of the following calendar month.

8. **Training.** In order to ensure the proper implementation of best practicable treatment, the permittee must adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill, and the proper operation and cleaning of production systems, including but not limited to, training in feeding procedures. The permittee must keep, for Department inspection, training records for spill prevention and response, and feed management procedures.

K. OPERATIONS AND MAINTENANCE (O&M) PLAN

The permittee must have a current written comprehensive Operation & Maintenance (O&M) Plan for each net pen facility. The plan must provide a systematic approach by which the permittee shall at all times, properly operate and maintain all facilities and systems of pollution control used by the permittee to achieve compliance with the conditions of this General Permit. The O&M Plan must include provisions to maintain and implement a spill plan that includes information and procedures to address prevention, containment, and clean-up for spills or unplanned releases of drugs, cleaning products, disinfectants, feed and petroleum products. The O&M Plan must include a feed management plan detailing the permittee's feeding strategies and practices for each growing cycle.

By December 31 of each year, **or within 30 days of any significant change in operation of the net pen facility that has potential to affect compliance with this the terms and conditions of this General Permit or applicable water quality standards,** the permittee must evaluate and modify the O&M Plan accordingly. The O&M Plan must be kept on-site at all times and made available to Department personnel upon request.

SPECIAL CONDITIONS

L. PREDATOR AND CONTAINMENT NETS

When in use, horizontal predator nets must be maintained at least one (1) meter above the sea floor at all times. Vertical predator nets may extend to the sea floor. Nets must not impede the current flow or tidal exchange so as to contribute to the deposition of solids that would cause a violation of this General Permit or applicable water quality standard. The storage of predator control or containment nets on the sea floor is not authorized by this General Permit. Any net dropped or lost during storm events that is not recovered immediately must be tagged with a float, positioned using differential GPS, numbered, and reported to the Department ***within twenty-four (24) hours*** of becoming aware of the loss. The net must be recovered ***within thirty (30) days*** from the date lost, or as otherwise approved in writing by the Department.

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.

M. USE OF DRUGS FOR DISEASE CONTROL

1. **General requirements.** All drugs used for disease prevention or control must be approved or authorized by the U.S. Food and Drug Administration (FDA), and all applications must comply with applicable FDA requirements.

2. **FDA-approved drugs.** Drugs approved by the FDA for net pen aquacultural purposes may be used consistent with label instructions.

   a) Preventative treatments. The discharge of any approved drug administered as a preventative measure is not authorized by this General Permit, unless the following conditions are met: the drug must be approved by FDA, and the treatment and route of administration must be consistent with the drug's intended use. Discharges may occur through direct application of a drug or indirectly through feed, injection, ingestion, or immersion at the facility.

   b) Drugs not identified in the NOI. When the need to treat or control diseases requires the use of a FDA-approved drug not identified in an applicant's NOI, the permittee must notify the Department orally or by electronic mail prior to initial use of the drug.

      1) The notification must include a description of the drug, its intended purpose, the method of application, the amount, the concentration, the duration of the use, and information on aquatic toxicity.

      2) ***Within seven (7) days of*** the initial notification the permittee must submit a written report that includes all of the information outlined in Section M.2.b)1) above.

SPECIAL CONDITIONS

M. USE OF DRUGS FOR DISEASE CONTROL (cont'd)

3) The Department may require submission of a revised NOI, including public notice requirements, if the drug is to be used for more than a 30 consecutive day period.

4) If, upon review of information regarding the use of a drug pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may restrict or limit use of the drug.

c) Monitoring. 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.

3. **Extralabel drug use.** Extralabel drug use is not authorized by this General Permit, unless in accordance with a specific prescription written for that use by a licensed veterinarian.

a) Notification. The permittee must notify the Department orally or by e-mail prior to initial extralabel use of a drug.

1) The notification must include a description of the drug, its intended purpose, the method of application, the amount, concentration, and duration of the use, information on aquatic toxicity, and a description of how and why the use qualifies as an extralabel drug use under FDA requirements.

2) ***Within seven (7) days of*** the initial notification the permittee must submit a written report that includes all of the information outlined in Section M.3.a) 1) above. Notice must include documentation that a veterinarian has prescribed the drug for the proposed use. A copy of the veterinarian's prescription must be maintained on-site during treatment for Department review.

3) If, upon review of information regarding the extralabel use of a drug pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may deny, restrict or limit use of the drug.

b) Monitoring. 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.

4. **Investigational New Animal Drug (INAD).** The discharge of drugs authorized by the FDA for use during studies conducted under the INAD program is not authorized by this General Permit, unless in accordance with specific prior consent given in writing by the Department.

a) Initial report. The permittee must provide a written report to the Department for the proposed use of an INAD ***within seven (7) days*** of agreeing or signing up to participate in an INAD study. The written report must identify the INAD to be used, method of use, dosage, and disease or condition the INAD is intended to treat.

SPECIAL CONDITIONS

M. USE OF DRUGS FOR DISEASE CONTROL (cont'd)

b) Evaluation and monitoring. ***At least ninety (90) days prior to initial use*** of an INAD at a facility, the permittee must submit for Department review and approval a study plan for the use of the drug that:

1) Indicates the date the facility agreed or signed up to participate in the INAD study.

2) Demonstrates that the minimum amount of drug necessary to evaluate its safety, efficacy, and possible environmental impacts will be used.

3) Includes 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.

c) Notification. The permittee must notify the Department orally or by electronic mail ***no more than forty-eight (48) hours after*** beginning the first use of the INAD under the approved plan.

5. **Monthly drug use report.** The permittee must report, using a method and on a form approved by the Department, the discharge of any drug or other disease control chemicals ***on a monthly basis*** concurrent with the monthly feed and fish monitoring report required by this General Permit. The report must include the following information.

a) The number of days of application.
b) The drug or disease control chemical used.
c) The concentration of drug or disease control chemical administered and total quantity used.
d) The approximate number of fish as well as number of pens treated.
e) The method of application.
f) Condition treated.

6. **Sediment monitoring for drugs.** Sediment monitoring for drugs must include analysis for the compound(s) used and any known primary metabolites. Core samples for drugs must consist of the top two (2) centimeters of the seafloor. The permittee must conduct monitoring ***not less than seven (7) days nor more than thirty (30) days following*** each use of a drug, unless otherwise specified by the Department. Prior to using a drug for which the Department has required sediment monitoring, the permittee must submit a sediment monitoring plan for Department review and approval. The plan must include a proposed schedule for submission of monitoring results follow drug use. The permittee must not discharge a drug, for which monitoring is required, without a Department-approved sediment monitoring plan.

SPECIAL CONDITIONS

M. USE OF DRUGS FOR DISEASE CONTROL (cont'd)

7. **Signs.** The permittee must place signs at the perimeter of its leasehold to notify the public that drugs are or have been in use at that facility. The signs must be maintained for the duration of the use and any withdrawal period following termination of use. The signs must be at least 18 by 24 inches in size and contain the following text: "Medications are in use at this site. Contact the Maine Department of Environmental Protection or (company name) for details." and include a site designation.

N. PROTECTION OF ATLANTIC SALMON

1. **Applicability.** Special Condition N of this General Permit applies only to those facilities that stock Atlantic salmon.

2. **Genetic restrictions.** All reproductively viable Atlantic salmon placed in net pens must be of North American origin.

   a) Non-North American stock is defined as any Atlantic salmon (*Salmo salar*) that possess genetic material derived partially (hybrids) or entirely (purebreds) from any Atlantic salmon stocks of non-North American heritage, regardless of the number of generations that have passed since the initial introduction of the non-North American genetic material. For the purposes of this General Permit, classification of brood fish as either North American or non-North American stock will be based on genetic evaluation of each fish's DNA completed in accordance with Appendix E, *Atlantic Salmon Microsatellite Analysis Protocol*, of this General Permit.

   b) Transgenic salmonids. Transgenic salmonids at the facility are not authorized by this General Permit. This prohibition does not apply to vaccines.

   c) The permittee must maintain for a period of at least five (5) years all genetic evaluation information developed pursuant to Appendix E of this General Permit for Department review upon request.

3. **Marking.** All fish introduced into net pens at a facility must be marked to designate their commercially-reared origin so that in the event fish are found outside the confines of the facility they may be identified back to the facility.

   a) The permittee must maintain a copy of its marking plan and evidence the current marking plan received approval from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service (Services) for Department review upon request.

   b) ***By December 31 of each stocking year*** for a facility, the permittee must submit a summary of results from a third party QA/QC audit assessing marking effectiveness and demonstrating compliance with the approved marking plan.

SPECIAL CONDITIONS

N. PROTECTION OF ATLANTIC SALMON (cont'd)

4. **Stocking notice.** ***No later than March 1 of each calendar year***, the permittee must submit to the Department a notice that indicates whether or not the facility will be stocked that calendar year. For stocking of Atlantic salmon, this notice must include the following information.

   a) The name of the facility.

   b) A letter from the permittee certifying that the *Genetics and Marking Protocol* included as Appendix F of this General Permit, was followed in the production of all fish proposed for stocking.

   c) Evidence that the Services have confirmed all reproductively viable Atlantic salmon proposed for stocking are progeny of fish determined to be of North American origin.

      In the event the permittee plans to stock S0 (S zero) fish in the fall of a calendar year, the permittee may request and the Department may extend the deadline for submission of this evidence.

   d) Evidence that the Services have approved the proposed marking plan.

5. **Intentional release.** The intentional release of Atlantic salmon to the receiving waters beyond the confines of the net pens is not authorized by this General Permit.

6. **Containment management system.** The permittee must employ a fully functional marine Containment Management System (CMS) designed, constructed, operated, and audited so as to prevent the accidental or consequential escape of fish to open water.

   a) Each CMS plan must include a site plan or schematic; site plan description; procedures for inventory control, predator control, escape response, unusual event management, and severe weather; provisions for employee training, auditing methods, and record keeping requirements. The CMS must identify critical control points where escapes could potentially occur, specific control mechanisms for each of these points, and monitoring procedures to verify the effectiveness of controls.

   b) The permittee must prepare a written CMS plan prior to fish being first introduced into a facility and must maintain a current copy of the plan at the facility.

   c) The CMS must be audited by a qualified third party at least once per calendar year for all facilities with fish stocked in net pens.

   d) ***No later than December 31 of each calendar year***, the permittee must submit a written report of each annual audit required by section 6.c of this condition to the Department.

SPECIAL CONDITIONS

N. PROTECTION OF ATLANTIC SALMON (cont'd)

e) The CMS must also be audited by a qualified third party ***within thirty (30) days of a reportable escape*** required by section 7 of this condition or notification that a commercially-reared Atlantic salmon is found in a river within the range of the Gulf of Maine distinct population segment of Atlantic salmon, as defined by the Services. The Department, in consultation with the Army Corps of Engineers and the Services, may exempt a facility from any additional third party audits when the facility from which the fish escaped can be identified or when circumstances preclude the possibility that the facility was the source of the escaped fish. The permittee must submit a written audit report to the Department, with a copy to the Services, within thirty (30) days of the facility becoming aware that an audit is necessary.

f) Any time that a CMS audit identifies deficiencies, the written report must contain a corrective action plan, including a timetable for implementation and provisions for re-auditing, unless waived by the Department, to verify completion of all corrective actions.

g) The permittee must maintain for a period of at least five (5) years complete records, logs, reports of internal and third party audits and documents related to the CMS for each facility. The submission of standing inventory at the facility, including all transfers in and out, losses associated with disease, predation or escapes as reported to the Department of Marine Resources at the pen level of detail on a ***monthly basis*** pursuant to the requirements of *Leases and Special Licenses*, 12 M.R.S.A. § 6077, must meet the requirements of the CMS.

7. **Escape reporting.** The permittee must report any known or suspected escape of more than fifty (50) fish with an average weight of two (2) kilograms or more each, and/or a 25% reduction of biomass at a facility ***within twenty-four (24) hours*** of becoming aware of an escape to the MeDMR at 1-207-624-6554 (or 1-800-432-7381 during off-hours). The permittee must state that the purpose of the phone call is to provide notification of a reportable escape event of Atlantic salmon at a net pen facility. The permittee must provide the location of the escape event, the Department and/or MeDMR site ID for the facility, a facility contact person and phone number, the time of escape event, the estimated size of escape, and actions being taken in response to the escape. An escape reporting form using a Department approved format must be submitted to the MeDMR by electronic mail, with a copy to the Department and the Services, ***within twenty-four (24) hours following the oral report***. Other smaller escape events must be logged according to the CMS and be provided to the Department, the Services and the MeDMR upon request.

8. **Records.** Personnel from the Department, the MeDMR, the USEPA, and the Services, may inspect the facility during normal operation hours. Upon request by the permittee, government officials will provide credentials attesting to their position and will follow the facility's biosecurity procedures. Operational records regarding compliance with this condition must be made available to personnel from the Department, the MeDMR, the USEPA, and the Services for inspection upon request.

SPECIAL CONDITIONS

O. QUALITY ASSURANCE FOR ENVIRONMENTAL MONITORING AND CONTAINMENT SYSTEMS

Prior to any environmental data collection, infauna identification, analysis work, or containment system assessment associated with this permit, the permittee must provide to the Department documentation of the employee's or contractor's demonstrated capabilities to conduct such work. Additionally, sampling techniques and analysis methods that differ from those identified in this General Permit must be provided to the Department for review and approval.

P. MONITORING AND REPORTING

The permittee must submit all sample results and monitoring reports required by this General Permit to the Department at the following address:

Maine Department of Environmental Protection
Bureau of Land and Water Quality
Division of Water Quality Management
Aquaculture Compliance Inspector106 Hogan Road
Bangor, Maine 04401

Q. SEVERABILITY

In the event that any provision, or part thereof, of this permit is declared to be unlawful by a reviewing court, the remainder of the permit must remain in full force and effect, and must be construed and enforced in all aspects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

APPENDIX A – Sediment and benthic monitoring requirements

1. **Sediment and benthic infauna monitoring requirements.** Sediment and benthic infauna monitoring must be conducted at each of the sampling locations identified in the applicable of Appendices B or C (sulfides only for pre-stocking monitoring). The permittee must collect a minimum of three (3) field replicates from each sampling location. The permittee must report to the Department the mean of all samples collected across the facility as well as the results of individual replicates.

   Sediment sample collection, handling, preservation, storage, and analysis must be conducted in accordance with USEPA approved methods, where available, or as otherwise approved in writing by the Department. The permittee must maintain reference specimens for examination by Department staff or its designee for a period of at least five (5) years following collection.

   a) **Benthic infauna sample collection.** Single core samples of four (4) inches or larger in diameter must be collected from the sediment for benthic infauna evaluation and must be inserted to the point of resistance or fifteen (15) centimeters, whichever is less. The permittee must report depth of each core sample. Infauna samples must be sieved through a 1.0 millimeter mesh sieve. Organisms must be fixed in 10% buffered formalin solution and stained with a 1% Rose Bengal staining solution. After one day or more in the formalin solution, the formalin must be replaced with 70% ethanol to preserve the sample.

   b) **Sediment chemistry sample collection.** Core samples for sediment chemistry must consist of the top two (2) centimeters of the seafloor. If sediment grain size or sediment depth at one or more sampling locations does not allow for the collection of a sample for analyses, the permittee must provide a narrative describing the sampling impediments and efforts to collect a representative sample as close to the designated sampling location as possible. The Department reserves the right to require sampling at alternative location(s) if a sample cannot be collected at a default sampling location. The Department reserves the right to require sediment sampling for copper if copper-containing compounds are used on the nets or related appurtenances that contact the receiving water.

2. **Sediment and benthic monitoring reports.** The permittee must submit a report of sediment and benthic monitoring in an electronic format approved by the Department that includes the following information, as it applies based on the type of monitoring conducted.

   a) The date(s) and time(s) of the sampling and the results of the sample analyses.

   b) A site schematic of the sample locations located with latitude and longitude to the nearest one tenth second and by GPS in accordance with Department standards, including but not limited to, an accuracy of less than ten (10) meters.

   c) Site conditions including: prevailing current direction in relation to true north, tidal stage to the nearest one half meter above or below mean low water and depth of water.

   d) Mean values for sulfide based on the mean of all individual samples collected across a facility. Results of individual replicates must also be provided.

APPENDIX A – Sediment and benthic monitoring requirements (cont'd)

e) A summary that identifies all organisms to the lowest practical taxonomic level.

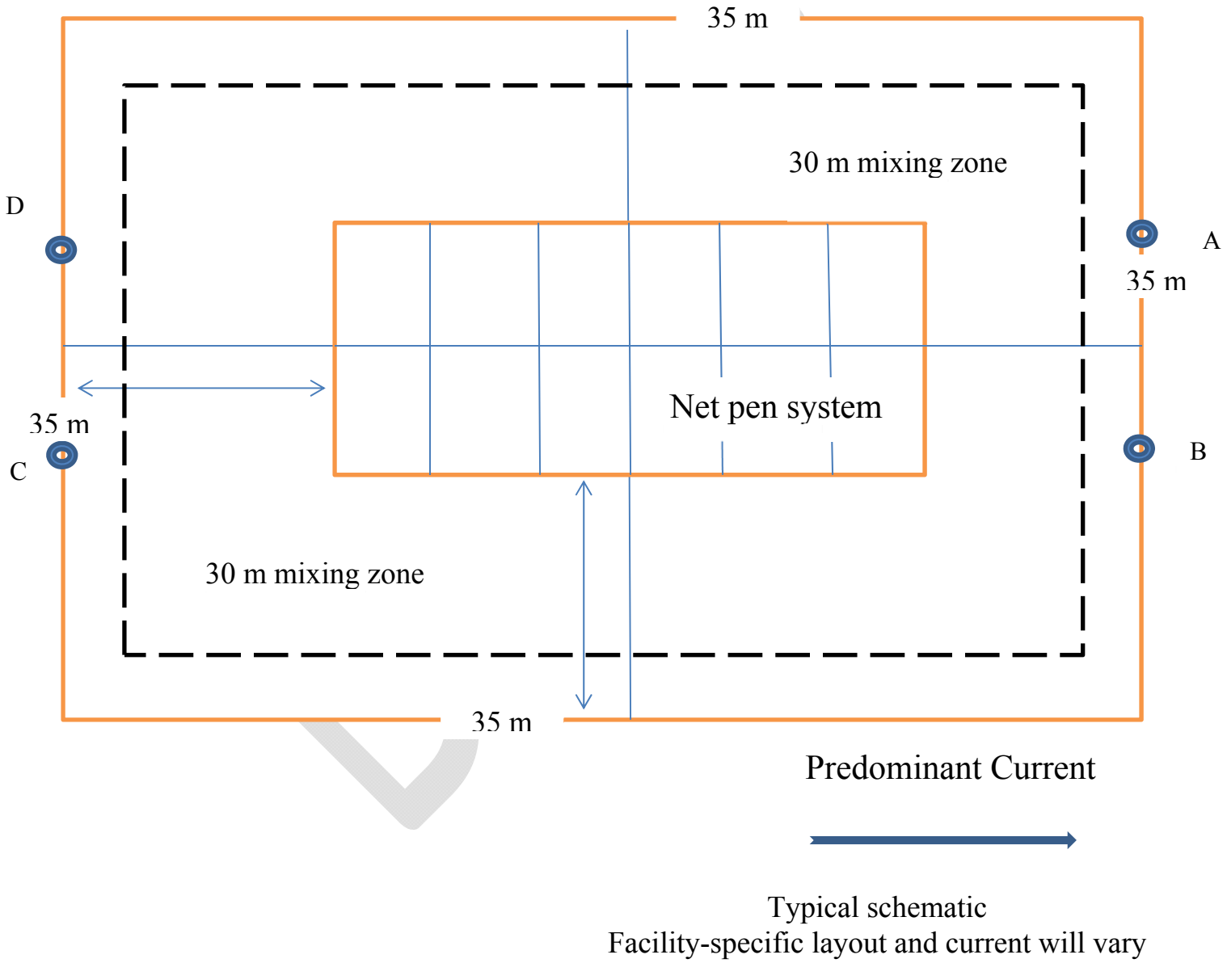
f) Raw numbers of organisms and the number per square meter or 0.1 m^2.

g) Mean values for Shannon-Wiener diversity index based on the mean of all individual samples collected across a facility. Results of individual replicates must also be provided.

h) A narrative describing inability to collect a sample at any sampling location and efforts to obtain a representative sample in close proximity to the default sampling location.

APPENDIX B – Screening and Exceedance Monitoring

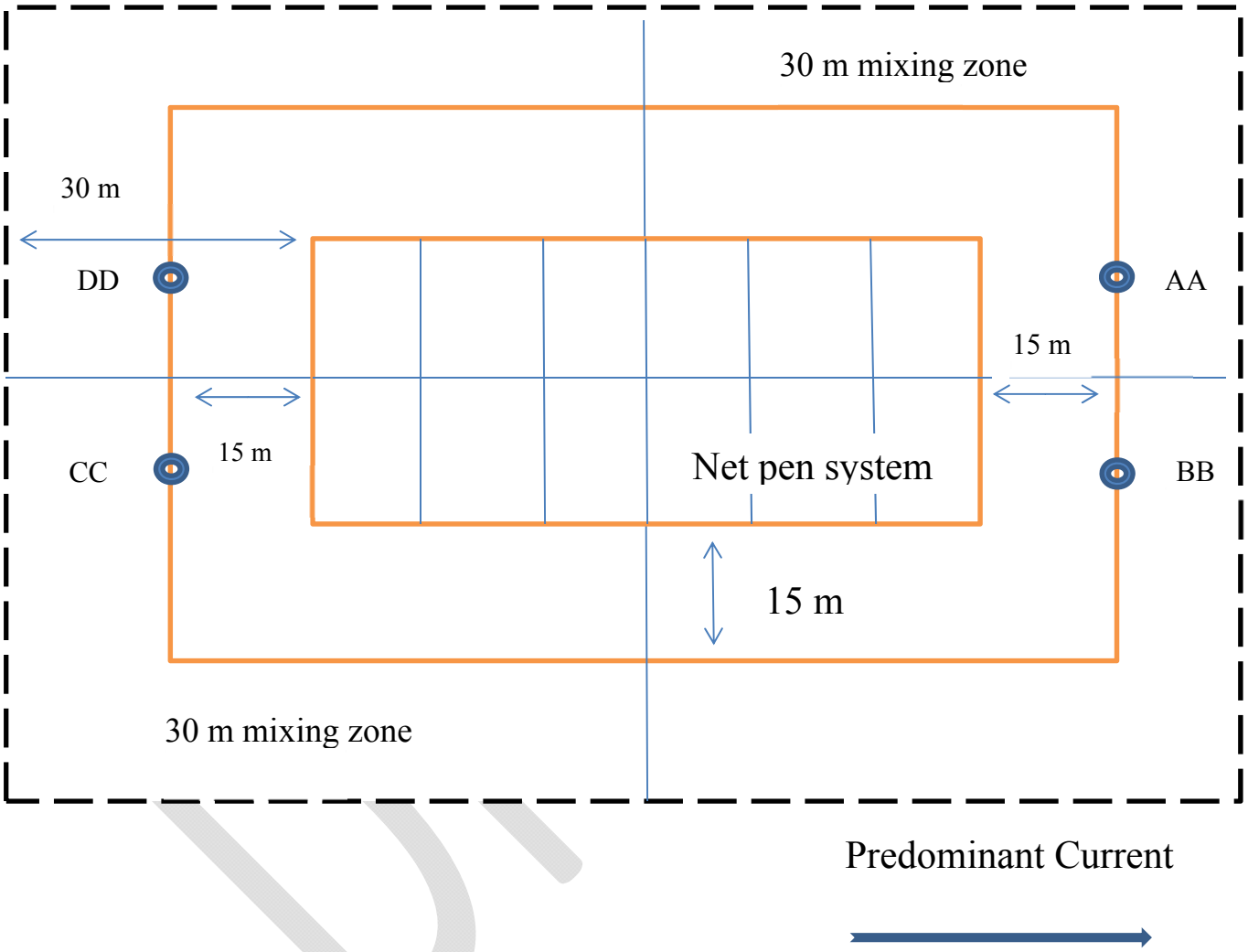
The permittee must collect a minimum of three (3) field replicates from A, B, C, and D (35 meters from edge of net pen system in line with prevailing current or other Department-approved sampling location if a more representative sampling location is appropriate) to satisfy Routine and Exceedance Monitoring requirements of the General Permit.



Typical schematic
Facility-specific layout and current will vary

APPENDIX C – Restocking Monitoring

The permittee must collect a minimum of three (3) field replicates from AA, BB, CC, and DD (15-meters from edge of net pens in line with prevailing current), or other Department-approved sampling location if a more representative sampling location is appropriate, prior to restocking a facility when the permittee exceeds an Exceedance Monitoring limit at Table H.2.



Typical schematic
Facility-specific layout and current will vary

APPENDIX D – Atlantic Salmon Microsatellite Analysis Protocol

This protocol must be used to determine which Atlantic salmon can be used for breeding and production stock pursuant to Special Condition N of this General Permit. The protocol describes a standardized procedure to classify fish as either North American or non-North American stock and is largely based on the procedures used by King *et al*. (2001; Molecular Ecology, 10: 807-821). The permittee is responsible for providing genotype data to the US Fish and Wildlife Service and the National Marine Fisheries Service (the "Services") for data analysis and fish classification as described herein.

DNA isolation

Genomic DNA must be isolated from tissue, fin clip or scale samples from each fish intended for use as broodstock employing either a commercially available DNA extraction, such as PureGene (Gentra Systems) or DNeasy tissue kit (Qiagen Inc.) or a phenol/chloroform based extraction system such as used in Patton *et al*. (1997; Can. J. Fish. Aquat. Sci., 54: 1548-1556) or, particularly for scales, a Chelex-resin based protocol such as given in King et al. (2001). DNA should be of sufficiently consistent quality and quantity to perform PCR analyses.

Microsatellite analysis

The loci used to classify brood fish as either North American or non-North American stock must be: Ssa85, Ssa171, Ssa197, and Ssa202 (O'Reilly *et al*. 1996); SSOSL311 and SSOSL438 (Slettan *et al*. 1995, 1996) and Ssa289 (McConnel *et al*. 1995). Additional loci are required for marking purposes via genetic parentage determination, and must be supplemental to the loci identified above that are used for continent of origin determination. Also, additional loci may be incorporated in the future by the Services to allow for unique genotypes or for additional identification purposes.

PCR conditions for the selected loci must essentially follow that of King et al. (2001) and Patton *et al*. (1997) with possible minor modifications for optimization of products of individual loci. The loci must be labeled with fluorescent dyes to allow for visualization, including Ned, Hex, and 6-Fam by ABI or any other comparable commercial supplier of labeled oligonucleotides. An appropriate size standard for genotyping must be used (such as the 500ROX by ABI). Microsatellite analysis must be performed using the ABI 3100 automated sequencer or any other commercial system providing equivalent results. Fragment analysis must be accomplished using a combination of GENESCAN and GENOTYPER software packages from ABI, or any other commercial system providing equivalent results. The facility must present electronic data tables from the GENOTYPER program, or in an equivalent program that is acceptable to the Services, to the Services in spreadsheet format in Excel or any other commercially available program providing equivalent results that allow the data to be easily reformatted for subsequent analyses. The output files (gel tracings) from GENESCAN and GENOTYPER must also be provided by the facility at the same time to help the Services assure data quality. Data provided must be complete at all loci for all fish.

APPENDIX D– Atlantic Salmon Microsatellite Analysis Protocol (cont'd)

Size verification of allelic products

To ensure accurate sizing of allelic products from the aquaculture fish relative to the designations developed in the King laboratory (see King *et al*. 2001). The Services must provide an adequate supply of DNA samples from representative fish of known genotypes to enable calibration of equipment throughout the term of the controlling license conditions. Control samples must be used at the inception of the study to set the automated allele designation/binning parameters of the GENOTYPER or equivalent genotyping software so that all subsequent allele designations made for aquaculture fish must be sized relative to the standards.

Genetic screening

Identification of North American aquaculture stock must be based on assignment tests performed with GeneClass, www.montpellier.inra.fr/URLB/geneclass/geneclass.html. Aquaculture fish must be compared to two reference groups. The first group must be comprised of samples from North America (Dennys, Ducktrap, East Machias, Machias, Narraguagus, Penobscot mainstem, Pleasant, Sheepscot, Conne, Gold, Gander, Miramichi, Saguenay, and Stewiacke rivers and aquaculture stocks derived from St John and Penobscot populations). The second group must be comprised of non-North American samples from at least 2 rivers each from Iceland, Norway, Finland, Scotland, Ireland, and Spain and the Landcatch aquaculture stock plus a hybrid stock crossing Landcatch with St. John, N.B. aquaculture salmon.

The likelihood for assigning any given fish to each reference population must be calculated using the program GeneClass. If the ratio of the likelihood scores indicates that North American origin is at least twice as likely as non-North American origin, then that fish will be considered to be of North American origin. All other fish must be classified as non-North American stock. In addition, those fish not able to be classified as either NNA or NA due to incomplete genotypes or insufficient sample size or quality must be considered non-North American. The Services must promptly report the results to the facility.

APPENDIX E – Genetics and Marking Protocol

This protocol must be used to ensure that all Atlantic salmon placed in net pens are of North American origin pursuant to Special Condition N of this General Permit, and all evidence to demonstrate compliance with this condition is available for Department review at the time a stocking plan is submitted.

1. Genetics. No fish classified as non-North American according to Appendix D of this General Permit may be used to create progeny for stocking net pens.

    a. Genetic evaluation information developed pursuant to Appendix D must be submitted to the National Marine Fisheries Service and/or the US Fish and Wildlife Service (collectively, the Services) for annual review of the continent of origin (i.e. evidence the current production of eggs and fish is of North American origin).
    b. Prior to the transfer of any eggs or fish from individual hatchery facilities, the permittee must have evidence demonstrating that the origin of the brookstock is North American, including identification of the hatchery, testing results, a description of the chain of custody of the fish, and confirmation from the Services to that effect.
    c. In the event any broodstock or gametes are classified as non-North American pursuant to Appendix D, the permittee must report to the Services the disposition of those fish or gametes.
    d. To meet the submission deadlines of this General Permit, the permittee must plan for the Services needing a minimum of 30 days to complete their review of any data or reports they receive.

2. Marking. Prior to marking fish to be stocked, the permittee must submit to the Services a description of the marking method(s) it proposes to use to designate the origin of the fish (marking plan).

    a. In the event that the Services identify similar or conflicting marks or marking methods, the permittee must make changes to its marking plan to assure that fish are uniquely identifiable as to the facility into which they are placed.
    b. A QA/QC program approved by the Services and including provisions for a third party audit must be in place to assess marking effectiveness and monitor compliance with the marking plan.

APPENDIX F – Summary of Scheduled Permit Reporting Requirements

Monitoring or Submission Requirement	Frequency / Timing	Report Due	Permit Condition
Transfer of ownership	As occurs	Within 2 weeks of legal change	D.4
Stocking notice	Annually	By March 1st of each year	F.1
Feed and fish recordkeeping	Monthly	On or before last day of each month	K.7
Sediment and benthic (Screening)	1/growing cycle (August – November) of max biomass	December 31st	I.1
Sediment and benthic (Exceedance)	During August – November following exceedance	March 1st	I.2
Sediment and benthic (Re-stocking)	Prior to restocking following exceedance	Not less than 14 days prior to restocking	I.3
Updated O&M Plan	In response to significant change	Within 30 days of significant change	K
Dropped or lost net notice	As occurs	Within 24 hours of loss	L
Dropped or lost net retrieval	As occurs	Within 30 days of loss	L
Drug use not on NOI – oral	As occurs	Prior to use	M.2.b
Drug use not on NOI - written	As occurs	Within 7 days of oral notice	M.2.b.2
Agreeing or signing up to participate in an INAD study	As occurs	Within 7 days of agreement	M.4.a
Use of an INAD – study plan	As occurs	At least 90 days prior to use	M.4.b
Discharge of INAD	As occurs	Not more than 48 hours after use	M.4.c
Drug use	Monthly	On or before last day of each month	N.5
Sediment monitoring for drugs	Not less than 7 days nor more than 30 days following drug use	Per Department-approved sediment monitoring plan	M.6
Fish marking effectiveness summary	Annually	December 31st of each stocking year	N.3.b
CMS audit report	Annually	December 31st of each year	N.6.d
CMS audit following escape	Following reportable escape	Within 30 days of escape	N.6.e
Submission of standing inventory	Monthly	In accordance with MeDMR	N.6.g
Escape reporting - oral	As occurs	Within 24 hours of escape	N.7
Escape reporting - written	As occurs	Within 24 hours of oral notice	N.7

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
MAINE WASTE DISCHARGE LICENSE

PROPOSED DRAFT
FACT SHEET

DATE: **DECEMBER 2, 2013**

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

DEPARTMENT CONTACTS:

BILL HINKEL
APPLICATION AND PERMITTING
Division of Water Quality Management
Maine Dept. of Environmental Protection
17 State House Station
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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 the requirements of these BMPs.

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 finish species that may legally be cultivated in net pens in Maine.

2. Carrying forward exclusions on area of coverage, current velocity and stratification.

3. Eliminating the water column mixing zone as an unnecessary provision of the previous permit.

4. Carrying forward the 30-meter sediment mixing zone.

5. Eliminating video/photographic monitoring and reporting requirements.

6. 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.

7. Eliminating the requirement to maintain reference sites based on the revised sediment and benthic monitoring structure.

8. Establishing a requirement to demonstrate compliance with sulfide standards prior to restocking a facility that exceeded a General Permit limitation.

9. Carrying forward conditions for protection of Atlantic salmon.

10. Restructuring several components of the pervious General Permit under a new condition entitled, Best Practicable Treatment, for consistency with federal requirements and improved organization.

11. Carrying forward terms and conditions for use of drugs for disease control.

12. 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 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 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.

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.

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 7th, 16th, and 29th 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[1]. 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.

[1] "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[2] 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.

[2] 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 delegates 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 wtih 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 uM, 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 uM, 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 uM 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 uM 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 uM 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 ≥1,500 uM based on new information[3] 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 uM 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 uM level.

The Department filtered net pen aquaculture permit compliance data from 2009-2012 to determine whether the 3,000 uM 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 uM. This supports revising the exceedance limitation for sulfide outside the mixing zone to 1,500 uM. 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.

[3] 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.

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

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

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 stains 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:

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15. RESPONSE TO COMMENTS

Reserved.