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 April 10, 2014

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

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL PERMIT FOR NET PEN AQUACULTURE

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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 applicable provisions of *Pollution Control*, 38 M.R.S.A. §§ 411 – 424-B, *Water Classification Program*, 38 M.R.S.A. §§ 464 – 470 and *Federal Water Pollution Control Act*, Title 33 U.S.C. § 1251, and applicable rules of the Maine Department of Environmental Protection (Department), the 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 these BPT requirements.

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 The September 22, 2008 General Permit was issued for a five-year term and superseded the initial MEPDES permit issued by the Maine Board of Environmental Protection on June 19, 2003.

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

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

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

3. Carrying forward the 30-meter mixing zone.

4. Eliminating video/photographic monitoring and reporting requirements.

5. Restructuring and revising sediment and benthic monitoring requirements and limitations within and outside the sediment mixing zone based on new information that relies on Shannon-Wiener Diversity Index, total abundance composed of *Capitella capitata* and sulfide.

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

7. Establishing a requirement to demonstrate compliance with sulfide standards prior to restocking a facility.

8. Carrying forward conditions for protection of Atlantic salmon.

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

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

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

CONCLUSIONS

Based on the findings in the attached Fact Sheet, dated December 2, 2013 and revised March 21, 2014, 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 *Conditions of licenses*, 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, *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2(21)(A) (last amended August 25, 2013), and *General Permits for Certain Wastewater Discharges*, 06-096 CMR 529(3)(c) (last amended June 27, 2007)]

DONE AND DATED AT AUGUSTA, MAINE THIS 10th DAY OF April, 2014.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: /s/ Michael Kuhns
For PATRICIA W. AHO, Commissioner

Date filed with Board of Environmental Protection: April 10, 2014

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

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 classification 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:

Wastewater Permitting Section
Department of Environmental Protection
Bureau of Land and Water Quality
Division of Water Quality Management
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 total pounds of feed proposed during the calendar month of maximum feeding.

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. Applications that have been accepted as complete for processing by the Maine Department of Marine Resources or U.S. Army Corps of Engineers may also be used to satisfy this requirement.

p) Copies of the published Notice of Intent to File and a list of abutters to whom notice was provided in accordance with Special Condition D.3 must be submitted with the application.

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. **Public notice.** In accordance with 06-096 CMR 2(14)(A) and 06-096 CMR 529(3)(a), within 30 days prior to filing with the Department, an applicant must give public notice of Intent to File a NOI application using the form included with DEPLW0604-B. A NOI application that has been previously returned as incomplete for processing must comply with these requirements if the application is not resubmitted within 30 days of the date it was returned to the applicant. The notice must be mailed by certified mail or Certificate of Mailing to abutters, as determined by local tax records or other reliable means, to the municipal office of the municipality(ies) where the project is located and, if the project is located in the unorganized or deorganized areas of the state, to the appropriate county commissioners. The notice must also be published once in a newspaper circulated in the area where the project is located.

4. **Decisions.**

   a) **Effective date of coverage**. The Department must approve or deny each NOI submitted for coverage under this General Permit: 1) within 31 calendar days of receipt of a complete NOI; 2) within 31 calendar days of the date of public notice; or 3) on the effective date of this General Permit, whichever is later. If the Department does not notify the applicant within the specified timeframe, the NOI is automatically approved and becomes effective as if signed by the Commissioner in accordance with 06-096 CMR 2(19)(E). In the event coverage is denied, the Department must notify the applicant of the reason(s) for denial. 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).

5. **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. Not less than 24 months prior to expiration of this General Permit, the Department must notify all permittees covered under this General Permit of the decision to renew or not renew the General Permit. If the General Permit is to be renewed, it will 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 issuance date of the new General Permit.

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

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.

6. **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) in any facilities that calendar year.

2. **Restocking conditions**. The permittee may not stock fish 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 4,000 uM based on the mean of all samples at 5 meters. See Appendix C of this General Permit for sampling locations. The Department may impose conditions for restocking fish at a facility that has exceeded the restocking sulfide threshold within the mixing zone of 4,000 uM that are necessary to ensure compliance with this General Permit and that sulfide levels within the mixing zone do not exceed 4,000 uM. Sample results obtained from monitoring required pursuant to Special Condition I.3 of this General Permit may be submitted to satisfy this condition. Sample results obtained after completion of a grow cycle may be used provided results are submitted not less than 14 days prior to proposed restocking.

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 pursuant to Special Condition I, Table I.1 established in this General Permit.

H. MIXING ZONE

Pursuant to 38 M.R.S.A. § 451, the Department may establish a mixing zone for any discharge. This General Permit carries forward the mixing zones 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.

This General Permit designates two mixing zones: (1) a Water Column Mixing Zone, and (2) a Sediment Mixing Zone. Outside the designated Mixing Zones, discharges from the facility must not cause or contribute to conditions that are hazardous or toxic to aquatic life, or that would impair the uses designated by the classification of the receiving waters. 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. 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.

1. **Water Column Mixing Zone.** The Water Column Mixing Zone is defined as the area within and extending 30 meters beyond the perimeter of a net pen in all directions on the surface, and down to the sea floor/water column interface.

   The dissolved oxygen concentration within the water column mixing zone must not be lower than 6 mg/L at any point from the surface down to the sea floor/water column interface. The Department reserves the right to require routine or periodic dissolved oxygen monitoring within the water column mixing zone for any facility covered under this General Permit. In the event that a facility determines ambient DO within the water column mixing zone is less than 6 mg/L, the Department will take into consideration DO monitoring results from up-current and down-current monitoring stations in determining a facility's contribution to low ambient DO. Except for dissolved oxygen percent saturation, water quality within the water column mixing zone must comply with the applicable standards specified at *Standards for classification of marine and estuarine waters*, 38 M.R.S.A. § 465-B. A facility covered under this General Permit may at no time cause non-compliance of numeric or narrative water quality standards outside the designated water column mixing zone.

2. **Sediment Mixing Zone.** The Sediment Mixing Zone is defined as the sea floor directly below a net pen and extending on the sea floor 30 meters beyond the perimeter of each net pen 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.

SPECIAL CONDITIONS

I. SEDIMENT AND BENTHIC MONITORING REQUIREMENTS AND LIMITATIONS

1. Monitoring for sulfide at 35 meters must be conducted at a minimum frequency of once per growing cycle during the period of July 1 – November 15 during the year of maximum biomass for the facility.

2. Monitoring for benthic infauna to enable reporting of Shannon-Wiener Relative Diversity Index (*J*) and percent *Capitella capitata* is required only if the site-average sulfide test result is greater than 3,000 uM. Sampling must be conducted at 35 meters during the period of August 1 – November 15 to coincide with maximum biomass for the facility.

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

See Appendix A of this General Permit for conditions of sediment and benthic monitoring requirements.

Table I.1.

Parameters	Limitations	Sample Location	Data Submission Deadline
CLASS SB	Shannon-Wiener Relative Diversity Index (*J*) ≤ 0.5 based on the mean of all samples across site AND ≥25% total abundance composed of *Capitella capitata* based on the mean of all samples across site AND Sulfide ≥ 3,000uM 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	Sulfides by December 31 of the sampling year Benthic infauna results by March 1 of the year following sample collection
CLASS SC	Shannon-Wiener Relative Diversity Index (*J*) ≤ 0.4 based on mean of all samples across site AND ≥50% total abundance composed of *Capitella capitata* based on the mean of all samples across site AND Sulfide ≥3,000 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 %		

SPECIAL CONDITIONS

J. NARRATIVE LIMITATIONS

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.

K. 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

K. 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.

L. 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 all best practicable treatment requirements prescribed by this General Permit. The O&M Plan must identify the existence of and date of a feed management plan detailing the permittee's feeding strategies and practices for each growing cycle. The feed management plan must be made available to Department personnel for review upon request.

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

M. 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 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 and provided such discharges do not cause or contribute to a violation of an applicable water quality standard or condition of this General Permit. 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.

N. 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 N.2.b)1) above.

SPECIAL CONDITIONS

N. 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 N.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

N. 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. Currently available data or literature that adequately characterize the environmental fate of the INAD and its metabolite(s) may be proposed for consideration in determinations of environmental monitoring and evaluation programs required by the Department pursuant to this section.

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 following drug use. The permittee must not discharge a drug, for which monitoring is required, without a Department-approved sediment monitoring plan.

SPECIAL CONDITIONS

N. 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.

O. PROTECTION OF ATLANTIC SALMON

1. **Applicability.** Special Condition O. 2-8, inclusive, of this General Permit applies only to those facilities that stock Atlantic salmon. Special Condition O.5-8, inclusive, of this General Permit applies to all facilities covered under this General Permit.

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 D 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

O. 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 fish from a net pen 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

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

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

SPECIAL CONDITIONS

O. PROTECTION OF ATLANTIC SALMON (cont'd)

Escape Reporting Contact List:

Army Corps of Engineers
Maine Project Office; Jay Clement; Jay.L.Clement@usace.army.mil

Maine Department of Environmental Protection
Commissioner, Patricia Aho, patricia.aho@maine.gov, or current Commissioner

Maine Department Marine Resources
Policy Development Specialist; Chris Vonderweidt; chris.vonderweidt@maine.gov
Secretary to the Commissioner; Jessica McKay; jessica.mckay@maine.gov
Sea-Run Fisheries and Habitat Division Director; Oliver Cox; oliver.n.cox@maine.gov

National Marine Fisheries Service
Maine Field Station; David Bean; david.bean@noaa.gov

United States Fish & Wildlife Service
Maine Field Office; Wende Mahaney; wende_mahaney@fws.gov

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.

P. 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.

SPECIAL CONDITIONS

Q. 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

R. 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. 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 designated sampling location. 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 designated 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.

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

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.

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.

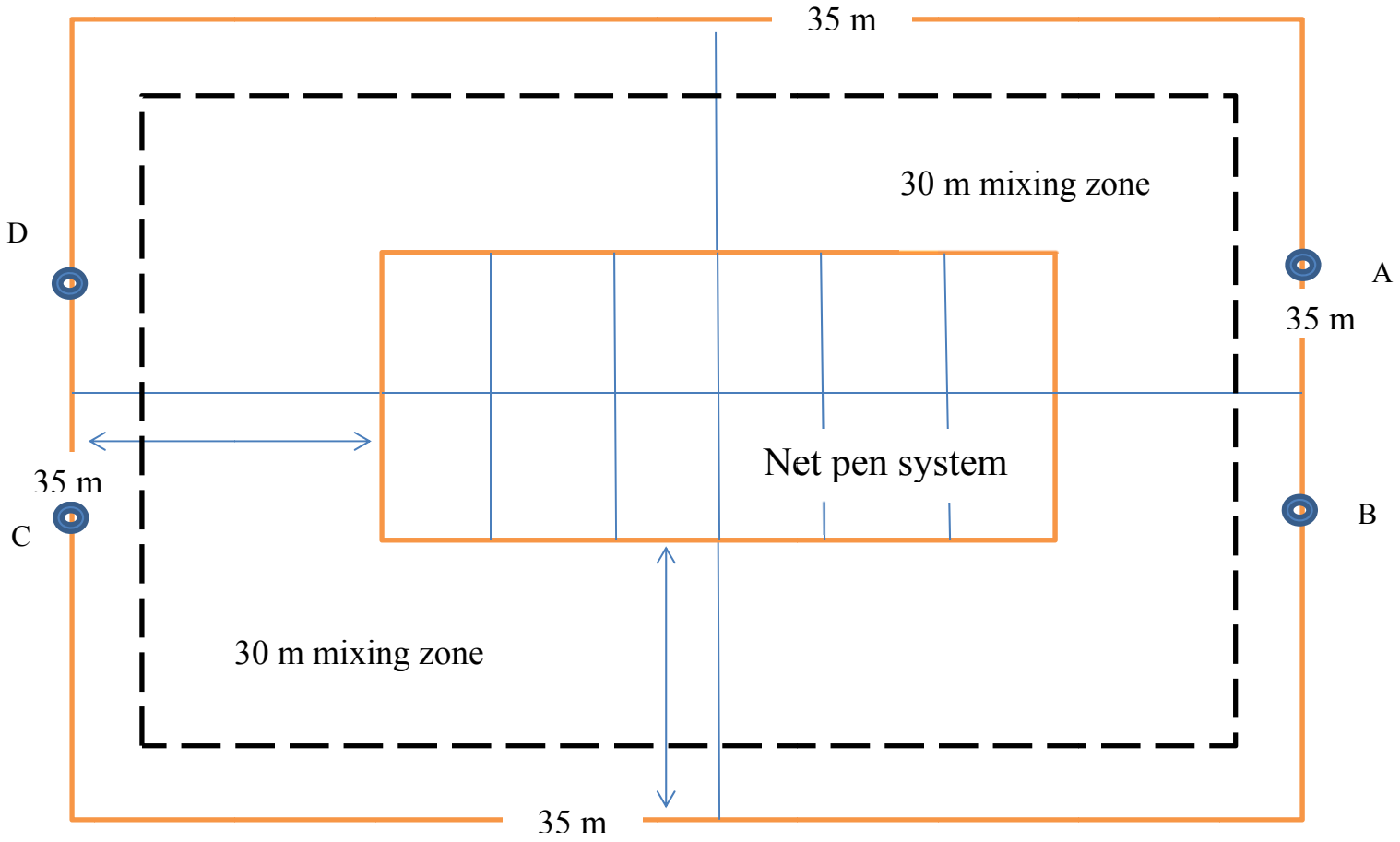
g) Mean value for Shannon-Wiener Relative Diversity Index (J) based on the mean of all individual samples collected across a facility. Results of individual replicates must also be provided.

h) Mean value for percent *Capitella capitata* based on the mean of all individual samples collected across a facility. Results of individual replicates must also be provided.

i) 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 – Sediment and Benthic Monitoring

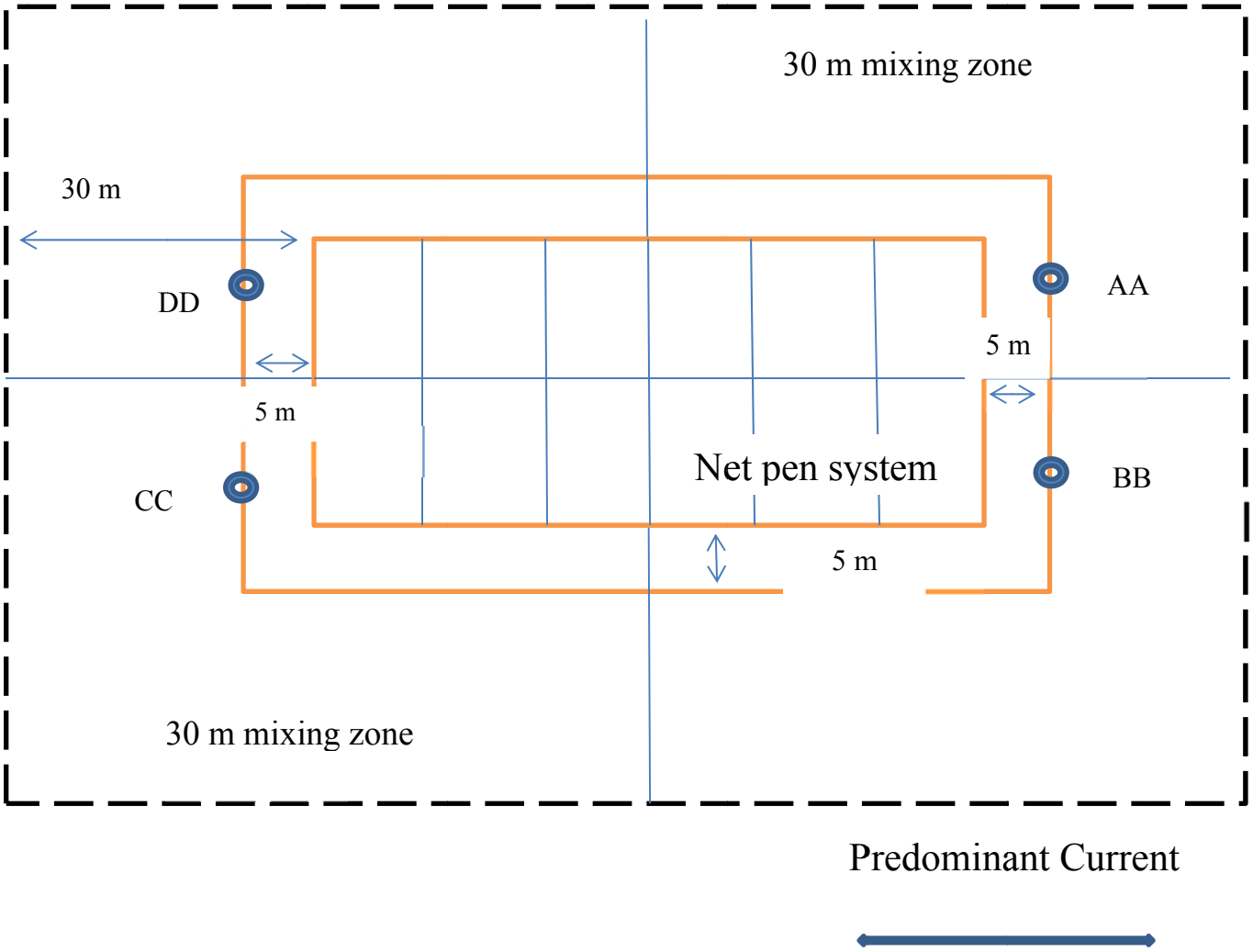
The permittee must collect a minimum of three (3) field replicates from A, B, C, and D (35 meters from edge of net pen system in line with prevailing current or other Department-approved sampling location if a more representative sampling location is appropriate) to satisfy sediment and benthic monitoring 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 (5-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.



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 O 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 O of this General Permit, and all evidence to demonstrate compliance with this condition is available for Department review at the time a stocking notice 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.5
Use of biocidal	As occurs	Prior to use	D.6
Stocking notice	Annually	By March 1st of each year	F.1
Sediment and benthic (Sulfides for restocking)	Prior to restocking	Not less than 14 days prior to restocking	F.2
Feed and fish recordkeeping	Monthly	On or before last day of each month	K.7
Sediment and benthic (Sulfides)	1/growing cycle (July 1 – November 15) of max biomass	December 31st	Table I.1
Sediment and benthic (Benthic Infauna)	During August 1 – November 15 following sulfide exceedance	March 1st	Table I.2
Updated O&M Plan	Annually or in response to significant change in operation	By December 31st of each year on within 30 days of significant change in operation	L
Dropped or lost net notice	As occurs	Within 24 hours of loss	M
Dropped or lost net retrieval	As occurs	Within 30 days of loss	M
Drug use not on NOI – oral	As occurs	Prior to use	N.2.b
Drug use not on NOI - written	As occurs	Within 7 days of oral notice	N.2.b.2
Agreeing or signing up to participate in an INAD study	As occurs	Within 7 days of agreement	N.4.a
Use of an INAD – study plan	As occurs	At least 90 days prior to use	N.4.b
Discharge of INAD	As occurs	Not more than 48 hours after use	N.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	N.6
Fish marking effectiveness summary	Annually	December 31st of each stocking year	O.3.b
CMS audit report	Annually	December 31st of each year	O.6.d
CMS audit following escape	Following reportable escape	Within 30 days of escape	O.6.e
Submission of standing inventory	Monthly	In accordance with MeDMR	O.6.g
Escape reporting - written	As occurs	Within 24 hours of becoming aware of escape	O.7