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

IN THE MATTER OF

DOWNEAST SALMON FEDERATION INC	)	MAINE POLLUTANT DISCHARGE
EAST MACHIAS AQUATIC RESEARCH CNTR	)	ELIMINATION SYSTEM PERMIT
EAST MACHIAS, WASHINGTON COUNTY, ME)		AND
FISH HATCHERY	)	
#ME0110523	)	WASTE DISCHARGE LICENSE
#W-009088-6F-D-R **APPROVAL**	)	**RENEWAL**

In compliance with the applicable provisions of *Pollution Control*, 38 M.R.S. §§ 411 – 424-B, *Water Classification Program*, 38 M.R.S. §§ 464 – 470 and *Federal Water Pollution Control Act*, Title 33 U.S.C. § 1251, and applicable rules of the Department of Environmental Protection (Department) has considered the application of the DOWNEAST SALMON FEDERATION INC, EAST MACHIAS AQUATIC RESEARCH CENTER (hereinafter EMARC, permittee), with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

APPLICATION SUMMARY

On November 22, 2016, the Department of Environmental Protection (Department) accepted as complete for processing an application from the Downeast Salmon Federation (DSF) for the renewal of combination Waste Discharge License W-009088-6F-A-N, / Maine Pollutant Discharge Elimination System Permit(MEPDES) ME0110523 for the continued discharge of a monthly average of 400,000 gallons per day (0.4 million gallons per day (MGD)) of fish hatchery wastewater to the East Machias River Estuary, Class SB, from a conservation finfish hatchery and fish rearing facility in East Machias, Maine.

PERMIT SUMMARY

This permitting action carries forward all the terms and conditions of the previous permit, except that it:

1. Removed language from Special Condition H of the previous permit and replaced it with new language in Special Condition H and I in this permit.
2. Revises the sample type for Flow from Measured to Estimate.
3. Establishes seasonal monitoring (May 1 – Nov 30) for BOD and TSS
4. Removes monitoring requirement for pH.
5. Removes Section 7 Settling Basin Cleaning of the previous Fact Sheet

CONCLUSIONS

BASED on the findings in the attached Fact Sheet dated October 15, 2019, and subject to the Conditions listed below, the Department makes the following conclusions:

1. The discharge, 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, 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. § 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) Where the standards of classification of the receiving waterbody are not met, the discharge will not cause or contribute to the failure of the waterbody to meet the standards of classification;

   (d) Where the actual quality of any classified receiving waterbody 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 waterbody, 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 will be subject to effluent limitations that require application of best practicable treatment as defined in 38 M.R.S. § 414-A(1)(D).

ACTION

THEREFORE, the Department APPROVES the above noted application of the DOWNEAST SALMON FEDERATION INC, EAST MACHIAS AQUATIC RESEARCH CENTER to discharge fish hatchery and rearing facility wastewater consisting of a monthly average flow of 0.4 MGD to the East Machias River Estuary, Class SB, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations including:

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

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

3. This 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. If a renewal application is timely submitted and accepted as complete for processing prior to the expiration of this permit the authorization to discharge and the terms and conditions of this license and all modifications and minor revisions thereto remain in effect until a final Department decision on the renewal application becomes effective. [*Maine Administrative Procedure Act*, 5 M.R.S. § 10002 and *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2(21)(A) (amended June 9, 2018)]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

DONE AND DATED AT AUGUSTA, MAINE, THIS____DAY OF _____, 2019.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____
Gerald D. Reid, COMMISSIONER

Date of initial receipt of application: November 21, 2016.

Date of application acceptance_____ November 22, 2016.

Date filed with Board of Environmental Protection _____

This Order prepared by Rod Robert, BUREAU OF WATER QUALITY

SPECIAL CONDITIONS
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. The permittee is authorized to discharge **fish hatchery and rearing facility wastewater from Outfall #001A** to the East Machias River Estuary, Class SB. Such discharges must be limited and monitored by the permittee as specified below. The italicized numeric values bracketed in the table below and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports (DMRs). Footnotes are found on Page 5.

Monitoring Parameter	**Discharge Limitations and Reporting Requirements**				**Minimum Monitoring Requirements**	
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Flow *[50050]*	0.4 MGD *[03]*	---	---	---	Daily *[01/01]*	Estimate *[ES]*
BOD_5[2] (From May 1 through November 30 annually) *[00310]*	20 lbs/day *[26]*	33 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	1/Month *[01/30]*	Composite[1] *[CP]*
TSS [2](From May 1 through November 30 annually) *[00530]*	20 lbs/day *[26]*	33 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	1/Month *[01/30]*	Composite[1] *[CP]*
Total Nitrogen3 (From May 1 through November 30 annually) *[00600]*	report lbs/day *[26]*	report lbs/day *[26]*	report mg/L *[19]*	report mg/L *[19]*	1/Month *[01/30]*	Grab *[GR]*
Fish on Hand *[45604]*	report lbs/day *[26]*	report lbs/day *[26]*	---	---	1/Month *[01/30]*	Calculated *[CA]*

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Footnotes:

1. **Sampling** – Effluent values shall be collected at Outfall #001A, the only authorized facility discharge, following all means of wastewater treatment, prior to discharge to the receiving water. All monitoring shall be conducted so as to capture conditions representative of wastewater generating processes at the facility, such as flow-through and cleaning discharge flows, use of therapeutic and disinfecting/sanitizing agents, etc. and in consideration of settling pond/basin detention times. Any change in sampling location must be approved by the Department in writing. The permittee must conduct sampling and analysis in accordance with; a) methods approved by 40 Code of Federal Regulations (CFR) Part 136, b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136, or c) as otherwise specified by the Department. Samples that are sent out for analysis must be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services for wastewater. Samples that are sent to a laboratory operated by a waste discharge facility licensed pursuant to *Waste discharge licenses*, 38 M.R.S. § 413 are subject to the provisions and restrictions of *Maine Comprehensive and Limited Environmental Laboratory Certification Rules*, 10-144 CMR 263 (effective date April 1, 2010). If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR).

   Composite Samples: Samples must consist of 24-hour composites collected with an automatic composite sampler. Alternatively, when weather conditions and/or equipment prevents automatic compositing and upon notification to the Department's compliance inspector, the permittee may manually composite a minimum of four grab samples collected at two-hour intervals during the working day at the facility.

2. **BOD and TSS .** During the period from Dec 1 to Apr 30 discharge levels of these parameters are sufficiently low enough given that the fish on hand are in egg/fry stage, to make monitoring unnecessary. The permittee has requested, and the Department has determined that seasonal (May 1 – Nov 30) monitoring is representative of the discharge when fish on hand are in a more advanced life-cycle stage.

3: **Total nitrogen** (TN): is the combination of total Kjeldahl nitrogen (TKN; made up of ammonia (NH_3) and organic nitrogen), nitrite (NO_2), and nitrate (NO_3) nitrogen. The permittee must measure TN by summing its constituents and must provide the constituent data in a supplemental report with the monthly DMR.

SPECIAL CONDITIONS

B. NARRATIVE EFFLUENT LIMITATIONS:

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

2. The permittee must not discharge effluent that contains materials in concentrations or combinations which are hazardous or toxic to aquatic life, or which would impair the uses designated for the classification of the receiving waters.

3. The permittee must not discharge effluent that causes 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 effluent 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.

C. AUTHORIZED DISCHARGES:

The permittee is authorized to discharge only in accordance with: 1) the permittee's General Application for Waste Discharge Permit, accepted for processing on November 22, 2016; 2) the terms and conditions of this permit; and 3) only from Outfall #001A, the only authorized facility discharge. Discharges of wastewater from any other point source are not authorized under this permit and must be reported in accordance with Standard Condition D(1)(f), *Twenty-four-hour reporting*, of this permit.

D. NOTIFICATION REQUIREMENT:

In accordance with Standard Condition D, the permittee must notify the Department of the following:

1. Any substantial change in the volume or character of pollutants being introduced into the wastewater collection and treatment system.

2. For the purposes of this section, adequate notice must include information on:

   a. The quality and quantity of wastewater introduced to the wastewater collection and treatment system; and

   b. Any anticipated change in the quality and quantity of the wastewater to be discharged from the treatment system.

SPECIAL CONDITIONS

E. MONITORING AND REPORTING:

Electronic Reporting

NPDES Electronic Reporting, 40 C.F.R. 127, requires MEPDES permit holders to submit monitoring results obtained during the previous month on an electronic discharge monitoring report to the regulatory agency utilizing the USEPA electronic system.

Electronic Discharge Monitoring Reports (DMRs) submitted using the USEPA NetDMR system, must be:

1. Submitted by a facility authorized signatory; and
2. Submitted no later than **midnight on the 15th day of the month** following the completed reporting period.

Documentation submitted in support of the electronic DMR may be attached to the electronic DMR. Toxics reporting must be done using the DEP toxsheet reporting form. An electronic copy of the Toxsheet reporting document must be submitted to your Department compliance inspector as an attachment to an email. In addition, a hardcopy form of this sheet must be signed and submitted to your compliance inspector, or a copy attached to your NetDMR submittal will suffice. Documentation submitted electronically to the Department in support of the electronic DMR must be submitted no later than midnight on the 15th day of the month following the completed reporting period.

Toxsheet reporting forms must be submitted electronically as an attachment to an email sent to your Department compliance inspector. In addition, a signed hardcopy of your toxsheet must also be submitted.

A signed copy of the DMR and all other reports required herein must be submitted to the Department assigned compliance inspector (unless otherwise specified) following address:
:

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

SPECIAL CONDITIONS

F. OPERATION & MAINTENANCE (O&M) PLAN:

The permittee must have a current written Operation & Maintenance (O&M) Plan for the facility. The plan must provide a systematic approach by which the permittee must at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit.

An acceptable O&M plan must ensure the following items are adequately addressed:

1. Solids Control

    a. Methods and practices to ensure efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges to waters of the State.

    b. In order to minimize the discharge of accumulated solids from the settling basin, settling tanks, and production systems, identify and implement procedures for routine cleaning of rearing units and settling tanks, and procedures to minimize any discharge of accumulated solids during the inventorying, grading, and harvesting of aquatic animals in the production system.

    c. Procedure for removal and disposal of mortalities to prevent discharge to waters of the State.

2. Materials Storage

    a. Ensure proper storage of drugs[1], pesticides[2], feed, and any petroleum and/or hazardous waste products in a manner designed to prevent spills that may result in the discharge of drugs, pesticides, or feed to waters of the State.

    b. Implement procedures for properly containing, cleaning, and disposing of any spilled material that has the potential to enter waters of the State.

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[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] **Pesticide.** "Pesticide" means any substance defined as a "pesticide" in section 2(u) of the *Federal Insecticide, Fungicide, and Rodenticide Act* [7 U.S.C. § 136 (u)].

SPECIAL CONDITIONS

F. OPERATION & MAINTENANCE PLAN (cont'd)

3. Structural Maintenance

    a. Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.

    b. Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

4. Recordkeeping

    a. Maintain records for fish rearing units documenting the feed amounts and estimates of the numbers and weight of fish.

    b. Maintain records that document the frequency of cleaning, inspections, repairs and maintenance.

5. Training

    a. In order to ensure the proper clean-up and disposal of spilled material adequately, train all relevant personnel in spill prevention and how to respond in the event of a spill.

    b. Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment to prevent unauthorized discharges.

By December 31 of each year, or within 90 days of any process changes or minor equipment upgrades, the permittee must evaluate and modify the O&M Plan including site plan(s) and schematic(s) for the wastewater treatment facility to ensure that it is up-to-date. The O&M Plan must be kept on-site at all times and made available to Department and USEPA personnel upon request.

Within 90 days of completion of new and or substantial upgrades of the wastewater treatment facility, the permittee must submit the updated O&M Plan to their Department inspector for review and comment.

SPECIAL CONDITIONS

G. 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 fish culture purposes may be used in accordance with label instructions.

   a. Preventative treatments: The discharge of any approved drug administered as a preventative measure is not authorized by this 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.

   b. Drugs identified in the permittee's application: A list of drugs, pesticides and other compounds proposed for use by the Downeast Salmon Federation at the Eastern Machias Aquatic Research Center during the term of the permit was provided by the permittee on Form DEPLW1999-18 included with its November 22, 2016, General Application for Waste Discharge Permit, and are listed as follows:

Name	Freq. of Use	Concentration	Qty. Used/Year
Sodium Chloride	As needed	N/A	6000 lbs
Argentyne	As needed	100 – 300 ppm	2 gallons

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

SPECIAL CONDITIONS

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

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 the information outlined in Section G.2.c(1).

3. The Department may require submission of an application for permit modification, 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 extra label 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.

3. **Extra label drug use.** Extra label drug use is not authorized by this 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 extra label 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 extra label 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 G.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 extra label 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.

SPECIAL CONDITIONS

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

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 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.

   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. Currently available data or literature that adequately characterizes the environmental fate of the INAD and its metabolite(s) may be proposed for consideration in determinations of environmental monitoring and evaluation programs 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.

H. PESTICIDES AND OTHER COMPOUNDS

1. **General requirements.** All pesticides used at the facility must be applied in compliance with federal labeling restrictions and in compliance with applicable statute, Board of Pesticides Control rules and best management practices (BMPs). Chemicals or compounds not registered as pesticides and proposed for use at the facility must be identified in the permittee's application and may only be discharged to waters of the State with express approval in this permitting action. In accordance with Special Condition D of this permit, the permittee must notify the Department of any substantial change in the volume or character of pollutants being introduced into the wastewater collection and treatment system.

SPECIAL CONDITIONS

I. SPILLS

In the event of a spill of drugs, pesticides, feed, petroleum and/or hazardous waste products that results in a discharge to waters of the State, the permittee must provide an oral report of the spill to the Department within 24 hours of its occurrence and a written report within 5 days to the Department. The report must include the identity and quantity of the material spilled.

J. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT:

Based on the information provided and Department BPJ, the permittee must provide minimum treatment technology for the EMARC facility that must consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, and removal of solids. EMARC must provide treatment and/or effluent quality equal to or better than the BPJ minimum treatment technology and must comply with all effluent limitations, monitoring requirements, and operational requirements established in this permitting action. Additional treatment may be necessary to achieve specific water quality based limitations.

K. SALMON GENETIC TESTING AND ESCAPE PREVENTION

The US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) formally listed the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon as an endangered species on November 17, 2000. On June 19, 2009, the two agencies expanded the geographic range of the listed GOM DPS. On June 19, 2009, NMFS also designated critical habitat for Atlantic salmon in certain watersheds within the GOM DPS. Two significant issues of concern regarding the rearing of salmon in Maine involve the genetic integrity of the salmon and escape prevention to avoid impacts on native fish.

The EMARC facility obtains Atlantic salmon eggs of the East Machias River strain from the Craig Brook National Fish Hatchery (CBNFH) in Orland, Maine for hatching, rearing, and release within the East Machias River watershed. CBNFH operates a river strain-specific program, insuring the genetic integrity of eggs provided to EMARC. Based on its operations, mission, and USFWS' input, CBNFH is not subject to requirements for genetic testing or a containment management system. The Downeast Salmon Federation will work in close cooperation with the USFWS to implement a program to assess alternate stocking and rearing strategies for restoration of the East Machias salmon population. As EMARC is hatching, rearing, and releasing East Machias River strain salmon to the East Machias River watershed, this permitting action does not require genetic testing or a containment management system for the EMARC facility.

Prior to raising any other strains or species at the East Machias facility, EMARC must adhere to Department standards for genetic testing and/or escape prevention or provide clear and compelling documentation from USFWS and NMFS that such requirements are not necessary. The Department guidance documents, "*Genetic Testing Requirements for Non-Marine Aquaculture (non-tested) Atlantic Salmon*" (**Permit Attachment A**) and "*Escape Prevention*" (Permit **Attachment B**) are incorporated herein by reference.

L. REOPENING OF PERMIT FOR MODIFICATIONS

Upon evaluation of the tests results or monitoring requirements specified in Special Conditions of this permitting action, new site specific information, new water quality monitoring data or modeling information, or any other pertinent test results or information obtained during the term of this permit, the Department may, at anytime and with notice to the permittee, modify this permit to; 1) include effluent limits necessary to control specific pollutants or whole effluent toxicity where there is a reasonable potential that the effluent may cause water quality criteria to be exceeded, (2) require additional monitoring if results on file are inconclusive; or (3) change monitoring requirements or limitations based on new information, including, but not limited to, new information from ambient water quality studies of the receiving water.

M. 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 respects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

ATTACHMENT A

(Genetic Testing Requirements for
Non-Marine Aquaculture (non-tested) Atlantic Salmon)

Genetic Testing Requirements for Non-Marine Aquaculture (non-tested) Atlantic Salmon

Maine's Aquaculture general permit and individual MEPDES Permits for marine aquaculture facilities contain requirements to address the genetic integrity of Atlantic salmon raised in Maine for aquaculture. The genetic requirements are implemented at the marine sites as well as at the hatchery and rearing facilities that raise and supply salmon for marine aquaculture. Facilities that raise salmon for purposes other than marine aquaculture are not subject to these requirements through other permitting actions. **If determined necessary by the Department pursuant to Permit Special Condition K, the permittee must comply with the following requirements.**

1. a. **The use of Atlantic salmon eggs or fish** (hereinafter referred to as Atlantic salmon) **originating from non-North American stock is prohibited at the facility.** 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 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 in accordance with the Atlantic Salmon Microsatellite Analysis Protocol (salmon testing protocol) below. The Microsatellite Protocol must be used to classify each brood fish.

   b. Only fish determined to be North American, according to the salmon testing protocol, can be used to produce offspring to be placed at the facility. No fish classified as non-North American can be used to create progeny for the facility.

   c. **Prior to January 1 of each year**, beginning the effective date of this permit, genetic evaluation information developed pursuant to the salmon testing protocol must be submitted to NOAA Fisheries and/or the US Fish and Wildlife Service, with confirmation sent to the Department.

   d. **Prior to April 30 of each year**, beginning the effective date of this permit, the permittee must submit to the Department confirmation from the Services demonstrating compliance with section 1. In the event any fish or gametes are found to be non-North American pursuant to the salmon testing protocol, the permittee must also report to the Department and the Services the disposition of those fish or gametes.

   e. As of the effective date of this permit, **all Atlantic salmon kept at the facility must be of North American origin. At least 30 days prior** to bringing any Atlantic salmon to the facility that are not destined for marine aquaculture and are thus not subject to the salmon testing protocol through other permit requirements, the permittee must provide the Department with written confirmation regarding compliance with these conditions.

2. Transgenic salmonids are prohibited. Transgenic salmonids are defined as 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. This prohibition does not apply to vaccines.

3. Personnel from the Department, the Department of Marine Resources, the US Environmental Protection Agency, NOAA Fisheries, and the US Fish and Wildlife Service must be allowed to inspect the facility during normal operation hours. These personnel will provide credentials attesting to their position and will follow the site's biosecurity procedures and may, at market value, purchase random samples of salmon from the facility to monitor compliance with these conditions. Operational records regarding compliance with this permitting action must be made available to these personnel for their inspection upon request.

4. The intentional release of Atlantic salmon to the receiving waters is prohibited.

Atlantic Salmon Microsatellite Analysis Protocol (salmon testing protocol)

This protocol will be used to determine which Atlantic salmon can be used for breeding and production stock pursuant to the requirements of this permitting action. 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 must be 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 will 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 will 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 will 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 will 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 will 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 will be used (such as the 500ROX by ABI). Microsatellite analysis will be performed using the ABI 3100 autosequencer or any other commercial system providing equivalent results. Fragment analysis will be accomplished using a combination of GENESCAN and GENOTYPER software packages from ABI, or any other commercial system providing equivalent results. The permittee will 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 will also be provided by the permittee at the same time to help the Services assure data quality. Data provided must be complete at all loci for all fish.

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 will provide an adequate supply of DNA samples from representative fish of known genotypes to enable calibration of equipment throughout the term of the controlling permit conditions. Control samples will be used at the inception of the study to set the automated allele designation/binning parameters of the GENOTYPER software or equivalent genotyping software so that all subsequent allele designations made for aquaculture fish will be sized relative to the standards.

Genetic screening
Identification of North American stock will be based on assignment tests performed with GeneClass, www.montpellier.inra.fr/URLB/geneclass/geneclass.html. Atlantic salmon for the facility will be compared to two reference groups. The first group will 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 will 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 NB aquaculture salmon.

The likelihood for assigning any given fish to each reference population will 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 will 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 will be considered non-North American. The Services will promptly report the results to the facility

ATTACHMENT B

(Escape Prevention)

Containment Management System Requirements (Escape Prevention)

In review of MEPDES Permit / Maine WDLs since the 2000 listing and continuing with the 2009 listing expansion, the USFWS and NMFS have advocated for genetic testing of Atlantic salmon housed at hatchery and rearing facilities to ensure that they are of North American origin, as well as employment of a fully functional Containment Management System (CMS) at facilities to prevent the escape of raised salmon or other species of concern in order to avoid impacts on native fish populations. **If determined necessary by the Department pursuant to Permit Special Condition K, the permittee must comply with the following requirements for escape prevention.**

Based on requirements established in Maine's Aquaculture General Permit (#MEG130000, Part II, Section I), individual MEPDES Permits for marine aquaculture facilities, and guidance developed by the Maine Aquaculture Association, **the permittee must employ a fully functional CMS at the facility** designed, constructed, and operated so as to prevent the accidental or consequential escape of fish to open water. The CMS plan must include a site plan or schematic with specifications of the particular system. The permittee must develop and utilize a CMS consisting of management and auditing methods to describe or address the following: site plan description, inventory control procedures, predator control procedures, escape response procedures, unusual event management, severe weather procedures and training. The CMS must contain a facility specific list of critical control points (CCP) where escapes have been determined to potentially occur. Each CCP must address the following: the specific location, control mechanisms, critical limits, monitoring procedures, appropriate corrective actions, verification procedures that define adequate CCP monitoring, and a defined record keeping system. **The permittee must submit the CMS plan to the Department for review and approval, and receive approval from the Department, prior to housing any other strain or species at EMARC.**

The CMS site specific plan must describe the use of effective containment barriers appropriate to the life history of the fish. The facility must have in place both a three-barrier system for fish up to 5 grams in size and a two barrier system for fish 5 grams in size or larger. The three-barrier system must include one barrier at the incubation/rearing unit, one barrier at the effluent from the hatch house/fry rearing area and a third barrier placed inline with the entire effluent from the facility. The two-barrier system must include one barrier at the individual rearing unit drain and one barrier inline with the total effluent from the facility. Each barrier must be appropriate to the size of fish being contained. Barriers installed in the system may be of the screen type or some other similarly effective device used to contain fish of a specific size in a designated area. Barriers installed in the system for compliance with these requirements must be monitored daily. Additional requirements include:

1. The CMS must be audited **at least once per year and within 30 days of a reportable escape** (more than 50 fish) by a party other than the facility operator or owner qualified to conduct such audits and approved by the Department ***[63899]***. A written report of these audits must be provided to the permittee and the Department for review and approval **within 30 days of the audit being conducted**. If deficiencies are identified during the audit, the report must contain a corrective action plan, including a timetable for implementation and re-auditing to verify deficiencies are addressed as in the corrective action plan approved by the Department. Additional third party audits to verify correction of deficiencies must be conducted in accordance with the corrective action plan or upon request of the Department. The permittee must notify the Department upon completion of corrective actions.

2. Facility personnel responsible for routine operation must be properly trained and qualified to implement the CMS. **Prior to any 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.

3. The permittee must maintain complete records, logs, reports of internal and third party audits and documents related to the CMS on site for a period of 5 years.

4. For new facilities, a CMS must be prepared and submitted to the Department for review and approval prior to fish being introduced into the facility.

The permittee must report any known or suspected escapes of more than 50 fish within 24 hours to the Maine Dept of Marine Resources Bureau of Sea-Run Fisheries and Habitats at 207-941-9973 (Pat Keliher and Joan Trial), Maine Department of Inland Fisheries and Wildlife at 207-287-5202 (Commissioner's office), USFWS Maine Field Office at 207-866-3344, and NMFS Maine Office at 207-866-4172. During off-hours, the reports can be called to 800-432-7381.

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
AND
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: **October 15, 2019**

MEPDES PERMIT NUMBER: **ME0110523**
MAINE WDL NUMBER: **W009088-6F-D-R**

NAME AND ADDRESS OF APPLICANT:

DOWNEAST SALMON FEDERATION INC
13 Willow St
East Machias, Maine 04630

COUNTY: **WASHINGTON**

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

EAST MACHIAS AQUATIC RESEARCH CENTER
13 Willow Street
East Machias, Maine 04630

RECEIVING WATER / CLASSIFICATION: **East Machias River Estuary, Class SB**

COGNIZANT OFFICIAL AND TELEPHONE NUMBER: **Mr. Zachariah Sheller**
(207) 255-0676
zach@mainesalmonrivers.org

1. APPLICATION SUMMARY

On November 22, 2016, the Department of Environmental Protection (Department) accepted as complete for processing an application from the Downeast Salmon Federation (DSF) for the renewal of combination Waste Discharge License W-009088-6F-A-N, / Maine Pollutant Discharge Elimination System Permit(MEPDES) ME0110523 for the continued discharge of a monthly average of 400,000 gallons per day (0.4 million gallons per day (MGD)) of fish hatchery wastewater to the East Machias River Estuary, Class SB, from a conservation finfish hatchery and fish rearing facility in East Machias, Maine. A location map and facility schematic are included as **Attachment A** of this Fact Sheet.

2. PERMIT SUMMARY

a. Terms and conditions: This permitting action carries forward all the terms and conditions of the previous permit, except that it:

1. Removed language from Special Condition H of the previous permit and replaced it with new language in Special Condition H and I in this permit.
2. Revises the sample type for Flow from Measured to Estimate.
3. Establishes seasonal monitoring (May 1 – Nov 30) for BOD and TSS
4. Removes monitoring requirement for pH.
5. Removes Section 7 Settling Basin Cleaning of the previous Fact Sheet

b. History: The relevant regulatory actions include the following:

2006 – Downeast Salmon Federation began operating the EMARC facility as an Atlantic salmon fish hatchery only. No disinfectants, sanitizing or therapeutic agents were discharged to the receiving water and no feeding of fish occurred on site. Based on this, the Department determined that the EMARC discharge to the East Machias River did not constitute a discharge of pollutants to a water of the State and thus no MEPDES Permit / Maine WDL was required for the operation at the time.

February 21, 2012 – Downeast Salmon Federation EMARC submitted an application for a MEPDES Permit / WDL. The application was assigned MEPDES Permit #ME010523/ WDL #W-009088-6F-A-N.

May 16, 2012 The Department issued MEPDES Permit #ME010523/ WDL #W-009088-6F-A-N for a five year term.

August 21, 2013 - The Department issued Minor Revision MEPDES Permit #ME010523/ WDL #W-009088-6F-B-M

April 16, 2013 - The Department issued Minor Revision MEPDES Permit #ME010523/ WDL #W-009088-6F-C-M

November 22, 2016 – Downeast Salmon Federation submitted an application for the renewal of MEPDES Permit #ME010523/ WDL #W-009088-6F-A-N

c. Source Description/ Facility Operation:

The Downeast Salmon Federation EMARC facility is a conservation finfish hatchery and rearing facility. EMARC rears Atlantic Salmon for restoration and as part of applied research. Phase I of the EMARC facility consists of four stacked egg trays for incubation and hatching, four fiberglass rearing tanks for grow-out, a 60-micron drum filter, and a concrete underground wastewater settling tank. Details on these structures and their operation are provided below.

2. PERMIT SUMMARY (cont'd)

EMARC obtains Atlantic salmon eggs of the East Machias River strain from the Craig Brook National Fish Hatchery (CBNFH) in Orland, Maine. Eggs are obtained at the eyed-egg stage of development, hatched, raised to fall parr (0+), and released within the East Machias River watershed in the same calendar year. The Downeast Salmon Federation works in close cooperation with the US Fish and Wildlife Service to implement a program to assess alternate stocking and rearing strategies for restoration of the East Machias Salmon population survival through use of East Machias River water, as this is the same river, water chemistry, and thermal regimes in which the reared fish are stocked.

Influent Water: The EMARC facility occupies a former Bangor Hydro-Electric Company building adjacent to the East Machias River. The influent water is supplied through two, 4-inch diameter, 500-foot long HDPE intake pipes installed in the river upstream of the facility in 2007. EMARC is a flow-through facility with flows through its hatchery and rearing facilities discharged to the East Machias River Estuary (Class SB).

Hatchery Facilities: In January of each year, EMARC obtains up to 400,000 eyed East Machias strain Atlantic salmon eggs from CBNFH. EMARC's hatchery facilities consist of up to 12 stacks of 8 egg trays (total 96 maximum egg trays) for incubation and hatching. The flow through rate for the egg trays is 3 gallons per minute through each stack. When EMARC uses more than 6 stacks, they are installed two stacks high. Thus, the maximum water use would be 18 gpm with 6 or more stacks in operation. During incubation, dead eggs are removed every two days. The eggs will typically hatch in February to March to yolk-sac fry and are transferred to substrate incubators. Fry will emerge from substrate incubators into rearing tanks of their own volition in late April or early May and begin being fed. Flow-through and cleaning wastewaters are routed directly to the facility drum filter.

The egg trays are then cleaned and shut down until the following January.

Rearing Facilities: EMARC's rearing facilities consist of four, 79.5 inches x 79.5 inches x 22- inches (operational depth), 600-gallon fiberglass rearing tanks. Salmon fry emerge from substrate incubators to the rearing tanks in late April or May for grow-out. Since the previous permitting action EMARC's Phase 2 build-out has expanded adding more rearing tanks bringing the total to twenty-five tanks on site. EMARC projects using a maximum of 88 pounds (40 kg) of food per day with a peak period of feeding during October. Fish are fed by hand and by automatic belt feeders. EMARC projects a maximum quantity of fish on station of 400,000 first-year fish weighing approximately 4,409 pounds at full facility build-out. Fall parr are released within the East Machias watershed in November of each year at a size of approximately 5 grams/fish.

Rearing tanks are operated in parallel, with flow-through and cleaning wastewaters discharged to an in-floor wastewater channel and routed directly to the facility drum filter. The rearing tanks will be cleaned daily with a soft-bristled push broom. The tanks have vertical screen center drains that make them self cleaning for most solids. Drain screens will be cleaned daily with a scrub brush.

2. PERMIT SUMMARY (cont'd)

d. Wastewater Treatment:

Egg incubation trays are cleaned of sediment and accumulated materials every two weeks during normal conditions and at a greater frequency at times of high river flow events that provide greater sediment loads in the intake water. Substrate incubators are not cleaned while in use, but sediment scour valves are opened once / day to discharge sediment that collects in the bottom of the incubators. Rearing tanks and drain screens are cleaned once / day during the rearing season. At the end of season for each rearing phase, all rearing vessels are hosed down and scrubbed with brush or abrasive pads. At the end of the season, the substrate incubator box and media are taken outside, pressure washed, and allowed to air dry.

All cleaning and flow-through wastewater flows by gravity to a 60-micron drum filter and 5 mm screen. Solid materials captured on the drum filter screens are removed through filter backwashing and gravity fed to two, 1,400-gallon concrete tanks installed in series for settling. Supernatant from the settling tank is injected back into the facility wastewater stream ahead of the drum filter. After the drum filter, facility wastewater goes through the 5 mm screen, and is discharged through an 8-inch diameter PVC pipe to Outfall #001A on the East Machias River below the head of tide. Outfall #001A is a previous Bangor Hydro concrete water intake structure that outlets to the river bank between the normal high water and low water lines. During high water conditions, EMARC's discharge flows directly into the side of the river. During low water conditions, the discharge flows across approximately 30-feet of rocky substrate before it reaches the East Machias River Estuary.

The facility settling tank is pumped out when accumulated solids reach 20% of its storage capacity and waste materials are taken offsite for proper disposal. Use of agents for therapeutic and disinfecting/sanitizing purposes is addressed in subsequent Fact Sheet sections titled accordingly.

3. CONDITIONS OF PERMITS

Conditions of licenses, 38 M.R.S. § 414-A, requires that the effluent limitations prescribed for discharges, including, but not limited to, effluent toxicity, require the 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, *Certain deposits and discharges prohibited,* 38 M.R.S. § 420 and Department rule *Surface Water Toxics Control Program,* 06-096 CMR 530 (effective March 21, 2012), 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.

4. RECEIVING WATER QUALITY STANDARDS

Classifications of estuarine and marine waters, 38 M.R.S. § 469 classifies the tidewaters of the East Machias River as Class SB waters. *Standards for classification of estuarine and marine waters*,38 M.R.S. § 465-B(2) describes the classification standards for Class SB waters.

5. RECEIVING WATER QUALITY CONDITIONS

The State of Maine 2016 *Integrated Water Quality Monitoring and Assessment Report* (DEPLW1187), prepared pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act contains lists of waters in Maine that are attaining water quality standards as well as those that are impaired. The report includes the receiving water in the designation *Machias – East Machias Rivers* (Waterbody ID 709-1, DMR Area 55), listed in Category 2, Estuarine and Marine Waters Attaining Some Designated Uses – Insufficient Information for Other Uses. The listing identifies a 729-acre (1.14 sq.mi.) segment of Class SB water with the reason for DMR closure indicated as OBDs (and STP). Maine DMR Chapter 95.09(E) Area No. 55, Section A states,

All estuarine and marine waters in Maine capable of supporting American lobster are listed as only partially supporting fishing ("shellfish" consumption) due to elevated levels of PCBs and other persistent, bioaccumulating substances in lobster tomalley. (Category 5-D: Estuarine and Marine Waters Impaired by Legacy Pollutants)

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS

a. Flow: This permitting action carries forward the previously established monthly average discharge limit of 400,000 gallons per day (0.4 MGD), representative of the design criteria of the facility. This permitting action establishes a daily estimate of flow due to the occurrence of fouling from sediment and debris at the intake point from the Machias river. The permittee will estimate flow by calculating the time it takes to fill a container with a known volume

A review of the monthly Discharge Monitoring Report (DMR) data for the period June 2012 to November 2018 indicates values have been reported as follows.

Flow (DMRs = 50)

Value	Limit (MGD)	Range (MGD)	Mean (MGD)
Monthly Average	0.4	0.08 – 0.4	0.17

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

b. Dilution Factors: Dilution factors associated with wastewater discharges are derived in accordance with protocols established in Department Rule 06-096 CMR 530, *Surface Water Toxics Control Program*, October 2005. 06-096 CMR 530.4.B indicates, "*For estuaries where tidal flow is not dominant and fresh waters, stream design flows used in the analyses of dilution factors from dilution models must be consistent with the exposure of the population at risk to any and all toxic pollutants.*" MEDEP DEA has determined that the receiving water at the EMARC facility outfall location is predominated by freshwater flows from the East Machias River. For such conditions, in addition to the protocols referenced above, the Department also utilizes methods for low flow calculation contained in Estimating Monthly, Annual, and Low 7-day, 10-year Streamflows for Ungaged Rivers in Maine (Scientific Investigations Report 2004-5026, US Department of Interior, US Geological Service). To calculate potential effects from a facility's effluent discharge, the Department utilizes the receiving water's available dilution during low flow conditions. The EMARC facility will discharge its treated effluent via a discharge pipe into the side of the East Machias River estuary at the mean high-water level. During low water conditions, the discharge will flow across approximately 30 feet of rocky substrate prior to contact with the East Machias River. Typically, these types of discharges do not achieve rapid and complete mixing with the receiving water since initial dilution is based on mixing resulting from the momentum of a discharge as it exits a discharge pipe (jet effect) as well as the dispersion of the effluent plume as it rises to the surface of the receiving water. Based on the location and configuration of the facility outfall pipe as well as the physical properties of the East Machias River estuary, the Department has determined the dilution factors for the discharge of a monthly average of 0.4 MGD from the EMARC facility to be calculated as follows:

Mod. Acute: ¼ 1Q10 = 4.35 cfs $\Rightarrow \frac{(4.35 \text{ cfs})(0.6464) + 0.4 \text{ MGD}}{0.4 \text{ MGD}} =$ 8.0:1

Acute: 1Q10 = 17.4 cfs $\Rightarrow \frac{(17.4 \text{ cfs})(0.6464) + 0.4 \text{ MGD}}{0.4 \text{ MGD}} =$ 29.1:1

Chronic: 7Q10 = 19.5 cfs $\Rightarrow \frac{(19.5 \text{ cfs})(0.6464) + 0.4 \text{ MGD}}{0.4 \text{ MGD}} =$ 32.5:1

Harmonic Mean = 58.5 cfs $\Rightarrow \frac{(58.5 \text{ cfs})(0.6464) + 0.4 \text{ MGD}}{0.4 \text{ MGD}} =$ 95.5:1

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

06-096 CMR 530.4.B(1) states that analyses using numeric acute criteria for aquatic life must be based on ¼ of the 1Q10 stream design flow to prevent substantial acute toxicity within any mixing zone. The regulation goes on to say that where it can be demonstrated that a discharge achieves rapid and complete mixing with the receiving water by way of an efficient diffuser or other effective method, analyses may use a greater proportion of the stream design, up to including all of it. As stated above, EMARC's discharge does not achieve rapid and complete mixing, thus the Department is utilizing the default stream flows of ¼ of the 1Q10 pursuant to 06-096 CMR 530 in acute evaluations. If the location or positioning of EMARC's discharge changes in the future, such as extension to below the low water level, this determination may be revisited.

c. Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS): This permitting action carries forward the previously established monthly average and daily maximum concentration limits of 6 mg/L and 10 mg/L respectively for BOD_5 and TSS based on Department BPJ of Best Practicable Treatment (BPT) for flow-through fish hatcheries and rearing facilities. These limits are based on recommendations included in USEPA's 2002 proposed draft National Effluent Guidelines for TSS from fish hatchery wastewater receiving a secondary level of treatment, the Department's long-standing view of the relationship with and significance of BOD_5, and consideration of effluent quality from facilities utilizing the Department's BPJ of minimum treatment technology. Mass limits are established based on the monthly average flow limit, the appropriate concentration limit, and a standard conversion factor of 8.34 lbs/gallon, as shown below:

0.4 MGD x 6 mg/L monthly average x 8.34 lbs/gal = 20 lbs/day monthly average limit
0.4 MGD x 10 mg/L daily maximum x 8.34 lbs/gal = 33 lbs/day daily maximum limit

This permitting action establishes a seasonal (May 1-Nov30) monitoring period and carries forward the previously established minimum monitoring frequency requirement of once per month for effluent BOD_5 and TSS based on Department best professional judgement (BPJ) of monitoring frequencies necessary to characterize facility effluent conditions. A review of the monthly Discharge Monitoring Report (DMR) data for the period June 2012 to November 2018 indicates values have been reported as follows.

BOD mass (DMRs)

Value	Limit (lbs/day)	Range (lbs/day)	Mean (lbs/day)
Monthly Average	20	0 – 14.37	3.6
Daily Maximum	33	1.3 – 14.37	3.9

TSS concentration (DMRs = 67)

Value	Limit (mg/L)	Range (mg/L)	Mean (mg/L)
Monthly Average	6	2 – 9.2	3.4
Daily Maximum	10	2 – 9.2	3.4

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS (cont'd)

d. Total Nitrogen (TN): This permitting action carries forward the previously established reporting requirement for monthly average and daily maximum of Total Nitrogen at a minimum frequency of once per month, seasonally from May 1 – Nov. 30 of each year. A review of the monthly Discharge Monitoring Report (DMR) data for the period June 2012 to November 2018 indicates values have been reported as follows.

Value	Limit	Range (lbs/day)	Mean (lbs)
Monthly Average	Report	0 – 3.9	1.5
Daily Maximum	Report	0.6 – 3.91	1.97

e. Fish on Hand: This permitting establishes a reporting requirement for monthly average and daily maximum mass of fish on hand at a minimum frequency of once per month. This parameter is intended to enable both the Department and the permittee in evaluating management practices at the facility and trends in effluent quality and receiving water impacts. A review of the monthly Discharge Monitoring Report (DMR) data for the period June 2012 to November 2018 indicates values have been reported as follows.

Value	Limit (mg/L)	Range (lbs/day)	Mean (lbs/day)
Monthly Average	Report	15 - 3639	821
Daily Maximum	Report	15 - 3639	821

f. pH: The permittees facility is a once- through flow facility in which the fish rearing activities have no impact to the pH level of the receiving water. The pH of the receiving water is also episodic of pH levels below the 6-9 standard units (su). Therefore, the requirement to conduct monitoring for this parameter is being removed in this permitting action.

7. DISEASES, PATHOGENS, AND THERAPEUTIC AGENTS:

This permitting action establishes requirements related to diseases, pathogens, and therapeutic agents. Maine Department of Inland Fisheries and Wildlife (MDIFW) Rules (Chapter 2.03-A) and Maine Department of Marine Resources (MeDMR) Rules (Chapter 24.21) state that *"the transfer and/or introduction of organisms fall within the jurisdiction of the Department of Marine Resources (12 MRSA, §6071) into coastal waters within the State of Maine and the Department of Inland Fisheries and Wildlife (12 MRSA, §§7011, 7035 and 7201, 7202) into public and/or private waters within the State of Maine. These rules are intended to protect wild and farmed salmonid fish populations and must be applicable to all individuals involved in the culture and movement of live salmonids and gametes."* Further, both agencies' rules define Diseases of Regulatory Concern as *"...infectious agents that have been demonstrated to cause a significant increase in the risk of mortality among salmonid populations in the State of Maine. Diseases of Regulatory Concern are classified by the Commissioner into three (3) disease categories: exotic, endemic (limited distribution) and endemic based on an annual review and analysis of epidemiological data."*

7. DISEASES, PATHOGENS, AND THERAPEUTIC AGENTS (cont'd)

In the June 30, 2004, USEPA Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (National Effluent Guidelines), EPA requires proper storage of drugs, pesticides and feed and requires facilities to report use of any investigational new animal drug (INAD), extra-label drug use, and spills of drugs, pesticides or feed that results in a discharge to waters of the U.S.

This permitting action does not authorize the discharge of drugs authorized by the US Food and Drug Administration (USFDA) pursuant to the INAD program. As the INAD program typically involves the long-term study of drugs, their benefits and effects, the permittee is anticipated to be able to notify the Department of its intent to conduct, and provide information related to, such study. The permittee is required to provide notification to the Department for review and approval prior to the use and discharge of any drug pursuant to the INAD program. This notification must include information to demonstrate that the minimum amount of drug necessary to evaluate its safety, efficacy, and possible environmental impacts will be used. Notifications must also include 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. INAD related uses and discharges will be subject to Department review and approval.

The permittee must comply with Maine Department of Inland Fisheries and Wildlife (freshwater facilities) and Maine Department of Marine Resources (salmon & marine facilities) fish health rules (12 MRSA, §6071; 12 MRSA, §§7011, 7035, 7201, and 7202, or revised rules). The cited rules include requirements for notification to the appropriate agency within 24-hours of pathogen detection. In addition to the requirements of the MDIFW and MEDMR rules, the permittee must notify the Department in writing within 24-hours following pathogen detection, with information on the disease/pathogen, necessary control measures, and the veterinarian involved.

All medicated fish feeds, drugs, and other fish health therapeutants must be registered with USEPA as appropriate, approved by the USFDA, and applied according to USFDA accepted guidelines and manufacturer's label instructions or used as prescribed by a Maine licensed veterinarian as authorized in the Maine Veterinary Practice Act (31 MRSA, §4852) and the Maine Animal Welfare Act (7 MRSA, §3901). Proper veterinary records of all such materials used are to be maintained at the facility for a period of five years. This permitting action does not authorize routine off-label or extra-label drug use. Such uses must only be permitted in emergency situations and under the authority of a Maine licensed veterinarian.

The permittee must notify the Department in writing within 24-hours following such use, with information on the conditions necessitating off-label or extra-label drug use, necessary control measures, and the veterinarian involved.

7. DISEASES, PATHOGENS, AND THERAPEUTIC AGENTS (cont'd)

For either reporting requirement outlined, the permittee must provide information on: the proposed treatment(s) including materials/chemicals/agents used, material/chemical/agent toxicity to aquatic life, the mass and concentrations of materials/chemicals/agents as administered, and the concentrations to be expected in the effluent. For any off-label or extra-label use, the permittee must also provide a description of how the use constitutes off-label or extra-label use, the necessity for the use in terms of the condition to be treated and the inability to utilize accepted drugs or approved methods, the duration of the use, and the likely need of repeat treatments. If, upon review of information regarding a treatment pursuant to this section, the Department determines that significant adverse effects are likely to occur, it may restrict or limit such use. The use and discharge of therapeutic agents is subject to the conditions described in Permit Special Condition C, Authorized Discharges.

EMARC indicates that the following therapeutic agents are used at the East Machias facility. These agents must be used pursuant to the requirements specified herein.

Sodium Chloride treated with Yellow Prussiate of Soda (YPS). EMARC may use sodium chloride (NaCl, salt) as a treatment for bacterial gill disease. Salt is also used to assist fish in times of high stress. It induces additional slime production to aid in combat against fungal infections or naturally occurring external parasites. EMARC indicates that it may use up to 2 liters per tank up to four times per day if/when it is needed for the above uses.

The average concentration of NaCl in seawater is estimated at 35 parts per thousand (ppt) or 35,000 ppm. The Department's Division of Environmental Assessment (MEDEP DEA) reports that sampling results in Maine marine waters indicate salinity levels of approximately 30 ppt or 30,000 ppm. The DEA further reports that instream NaCl levels of between 1 and 5 ppt (1,000 and 5,000 ppm) can potentially result in harm to freshwater aquatic life. Effluent salt levels at EMARC would be subject to further dilution upon entering the receiving water. Based on analysis of typical salt use at similar facilities, the Department has determined that effluent salt concentrations are anticipated to fall significantly below the level of concern in the aquatic environment and as such considers this to be a de minimis discharge. The Department is not establishing specific limitations or monitoring requirements for NaCl in this permitting action. Instead, use of NaCl must be consistent with the use and record keeping requirements for therapeutic agents specified above.

The Department requires EMARC to report all other therapeutic agents used at the facility that have the potential to be discharged to the receiving water. The use and discharge of the materials described above or incorporated in the future are subject to the conditions described in Permit Special Condition C, Authorized Discharges.

8. DISINFECTING/SANITIZING AGENTS

EMARC indicates that the following disinfecting/sanitizing agents may be used at the East Machias facility. These agents must be used pursuant to the requirements specified herein.

Argentyne for disinfection of fish eggs, hatchery equipment pre and post rearing, and stocking equipment pre and post stocking. Active ingredients polymeric-iodine complex (10%), inert ingredients (90%), planned use at 100-300 ppm. The portion of iodine use that will result in discharge to the receiving water will be subject to further dilution upon entering the receiving water. Based on analysis of typical iodine use at similar facilities, the Department has determined that iodine discharges are likely to be de minimus. At this time, there are no ambient water quality criteria for iodine. Therefore, this permitting action is not establishing effluent limitations or monitoring requirements for iodine.
This permitting action establishes requirements related to disinfecting/sanitizing agents. Disinfectants and/or sanitizing agents must be registered with USEPA as appropriate and applied according to manufacturer's label instructions. Records of all disinfectants and/or sanitizing agents used that have the potential to enter the waste-stream or receiving water, their volumes and concentrations as used and concentrations at the point of discharge, must be maintained at the facility for a period of five years. This permitting action only authorizes the discharge of those materials applied for, evaluated by the Department, and either regulated or determined to be de minimis in this permitting action or in subsequent Department actions. The use and discharge of disinfecting/sanitizing agents is subject to the conditions described in Permit Special Condition C, Authorized Discharges.

9. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT

Between 2000 and 2002, eleven Maine fish hatcheries were evaluated to identify potential options for facility upgrades. All nine Maine Department of Inland Fisheries and Wildlife hatcheries were evaluated by FishPro Inc., while the two USFWS hatcheries were evaluated by the Freshwater Institute. Recommended wastewater treatment upgrades for each of the facilities included microscreen filtration of the effluent. In this permitting action, based on the information provided and Department BPJ, the Department requires that the permittee must provide minimum treatment technology for the EMARC facility that must consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, removal of solids. EMARC must comply with all effluent limitations, monitoring requirements, and operational requirements established in this permitting action. Additional treatment may be necessary to achieve specific water quality-based limitations.

10. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION

The US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NFMS) formally listed the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon as an endangered species on November 17, 2000. On June 19, 2009, the two agencies expanded the geographic range of the listed GOM DPS. The Atlantic salmon GOM DPS encompasses all naturally spawned and conservation hatchery populations of anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River and wherever these fish occur in the estuarine and marine environment. Also included in the GOM DPS are all associated conservation hatchery populations used to supplement these natural populations. Excluded are landlocked Atlantic salmon and those salmon raised in commercial hatcheries for aquaculture. On June 19, 2009, NMFS also designated critical habitat for Atlantic salmon in certain watersheds within the GOM DPS. Two significant issues of concern regarding the rearing of salmon in Maine involve the genetic integrity of the salmon and escape prevention to avoid impacts on native fish.

On December 4, 2000, in regard to the Department's pending delegation to administer the NPDES Permit Program, USEPA Region I informed the Department that "*permits issued to freshwater hatcheries raising salmon will require that the facility be designed or modified to achieve zero escapement of fish from the facility*". The EPA also stated, "*The information contained in the* (US Fish and Wildlife and NOAA Fisheries) *Services' listing documents indicates that a remnant population of wild Atlantic salmon is present in...*" Maine waters "*...and that salmon fish farms and hatcheries are activities having a significant impact on the...*" GOM DPS "*...through, among other things, the escape of farmed and non-North American strains of salmon which may interbreed with the wild Maine strains, compete for habitat, disrupt native salmon redds, and spread disease." "Based on this information, the Services have concluded that the escape of farm-raised salmon from fish farms and hatcheries is likely to significantly impair the growth, reproduction and habitat of wild salmon, thereby impairing the viability of the DPS." "EPA has analyzed current information, including these findings, and based on this information believes that this remnant population constitutes an existing instream use of certain Gulf of Maine rivers and considers that the above-described impacts to the population would be inconsistent with Maine's water quality standards. Assuming the information discussed above does not significantly change, EPA will utilize its authorities to ensure compliance with Maine water quality standards by ensuring that conditions to protect the remnant population of Atlantic salmon are included in NPDES permits for salmon fish farms and hatcheries, which are subject to regulation as concentrated aquatic animal production facilities." "In view of the substantial danger of extinction to the DPS described by the Services, it is EPA's view that proposed permits authorizing activities that would adversely affect the population, as described earlier in this letter, would be inconsistent with Maine's water quality standards and objectionable under the CWA.*"

10. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION (cont'd)

In review of MEPDES Permit / Maine WDLs since the 2000 listing and continuing with the 2009 listing expansion, the USFWS and NMFS have advocated for genetic testing of Atlantic salmon housed at hatchery and rearing facilities to ensure that they are of North American origin, as well as employment of a fully functional Containment Management System (CMS) at facilities to prevent the escape of raised salmon or other species of concern in order to avoid impacts on native fish populations. The release or escape of certain species is also of concern to the Maine Department of Inland Fisheries and Wildlife (MDIFW), which manages fisheries resources in Maine.

The EMARC facility obtains Atlantic salmon eggs of the East Machias River strain from the Craig Brook National Fish Hatchery (CBNFH) in Orland, Maine for hatching, rearing, and release within the East Machias River watershed. CBNFH operates a river strain-specific program, insuring the genetic integrity of eggs provided to EMARC. Based on its operations, mission, and USFWS' input, CBNFH is not subject to requirements for genetic testing or a containment management system. The Downeast Salmon Federation works in close cooperation with the USFWS to implement a program to assess alternate stocking and rearing strategies for restoration of the East Machias salmon population. As EMARC is hatching, rearing, and releasing East Machias River strain salmon to the East Machias River watershed, this permitting action does not require genetic testing or a containment management system for the EMARC facility.

Prior to raising any other strains or species at the East Machias facility, EMARC must adhere to Department standards for genetic testing (Permit Attachment A) and/or escape prevention (Permit Attachment B), or provide clear and compelling documentation from USFWS and NMFS that such requirements are not necessary.

11. DISCHARGE IMPACT ON RECEIVING WATER QUALITY

As permitted, based on the information available to date and best professional judgement, the Department has determined the existing water uses will be maintained and protected and the discharge will not cause or contribute to the failure of the East Machias River Estuary to meet standards for Class SB classification.

12. PUBLIC COMMENTS

Public notice of this application was made in the Downeast Coastal Press newspaper on or about November 21, 2016. The Department receives public comments on an application until the date a final agency action is taken on that application. Those persons receiving copies of draft permits must have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to Chapter 522 of the Department's rules.

13. DEPARTMENT CONTACTS

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

Rodney Robert
Division of Water Quality Management
Bureau of Water Quality
Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017

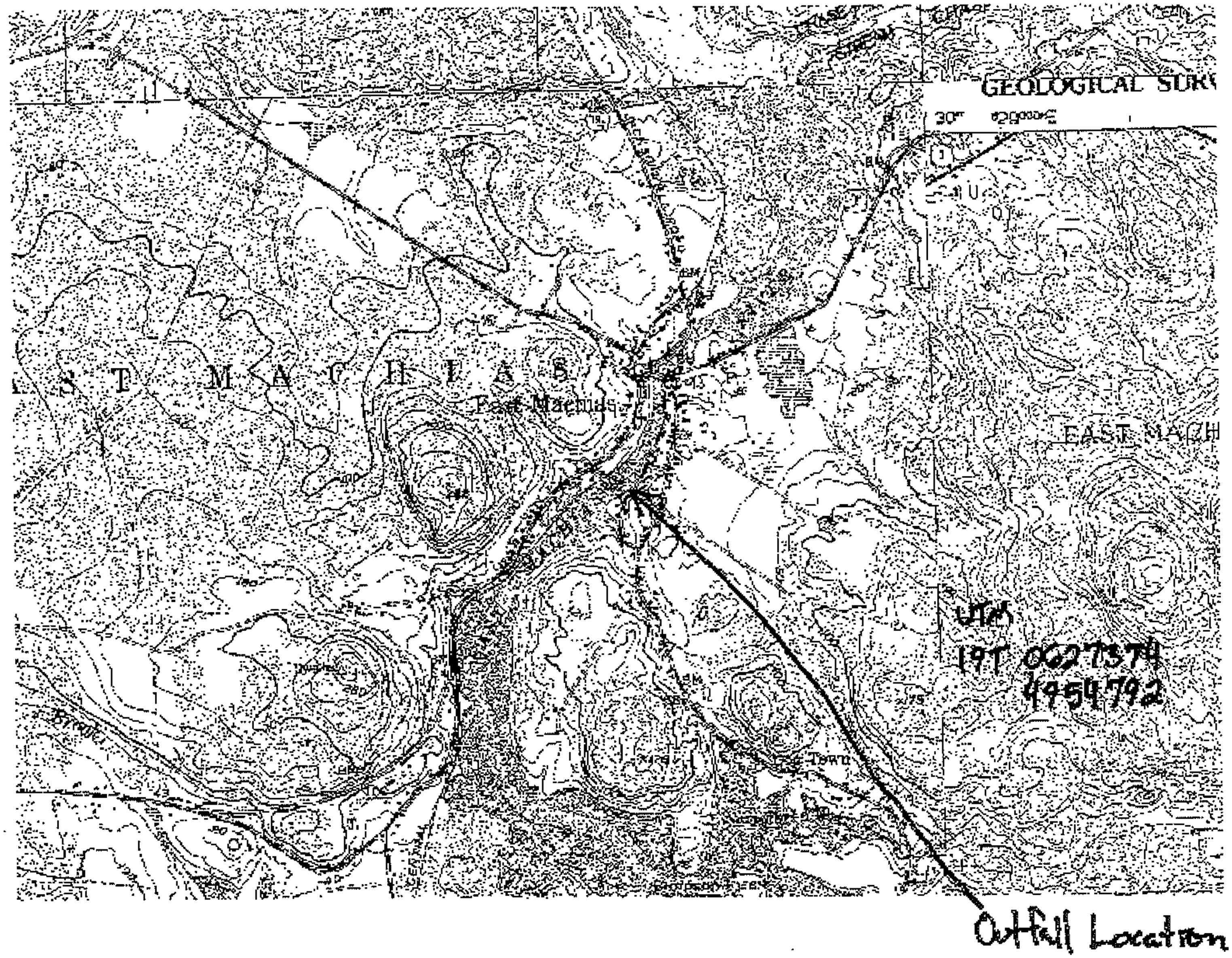
Telephone: (207) 446-1875
Fax: (207) 287-3435
email: Rodney.robert@maine.gov

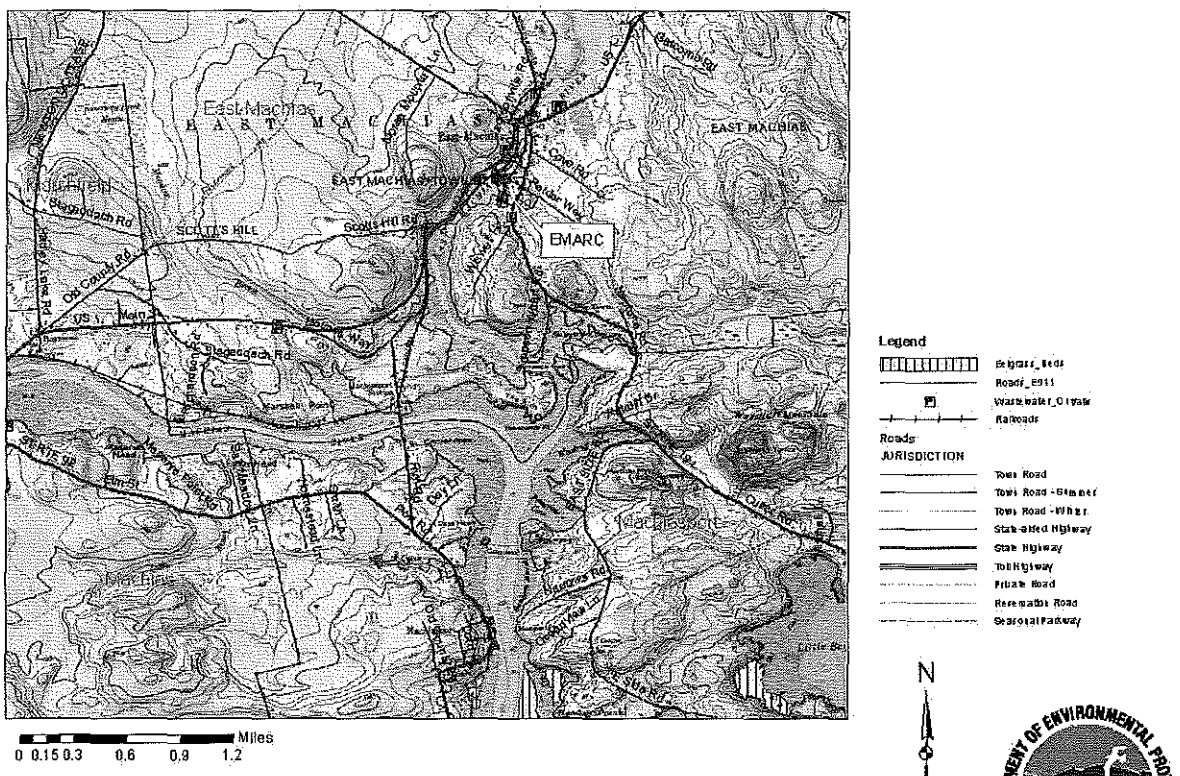
14. RESPONSE TO COMMENTS:

Reserved until the end of the formal thirty (30) day comment period

ATTACHMENT A

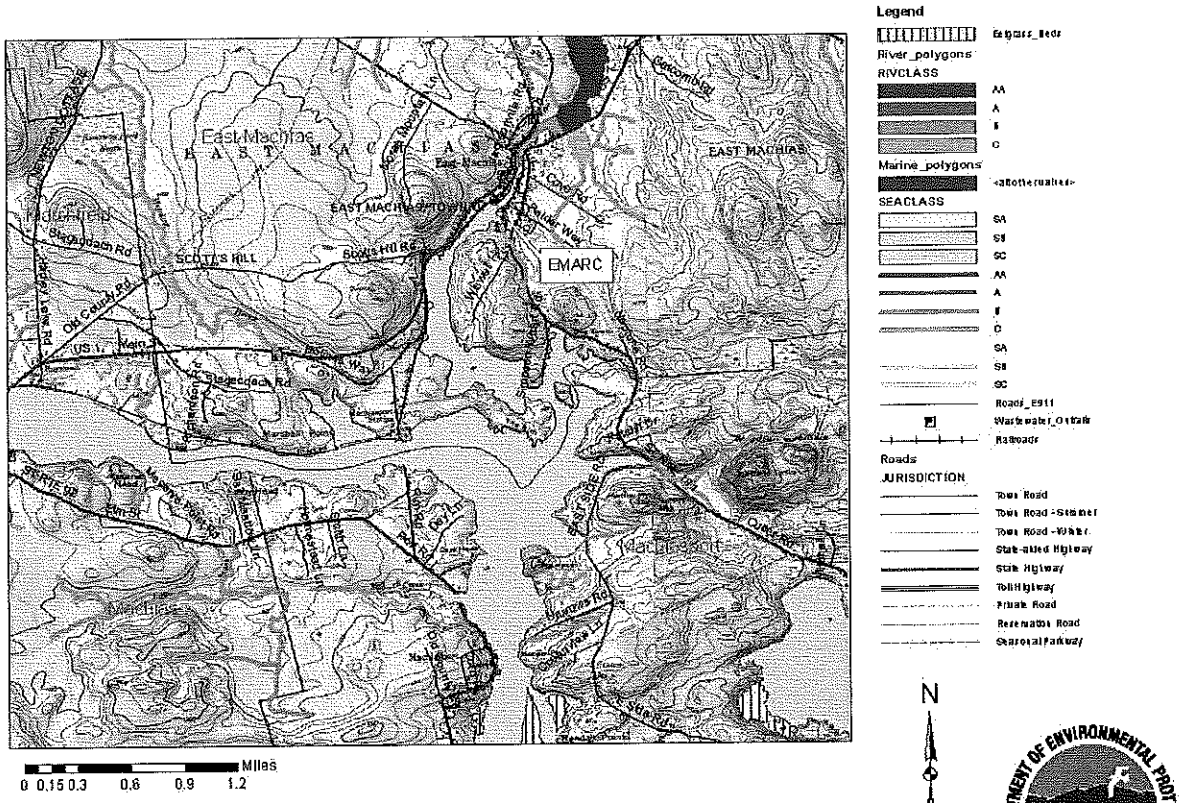
(Facility Location Maps)


GEOLOGICAL SURV
EAST MACHIAS
East Machias
UTM
19T 0627374
4954792
Outfall Location



East Machias Aquatic Research Center
East Machias, ME

Map created by:
Bob Stratton
Division of Water Quality Management
Maine Department of Environmental Protection

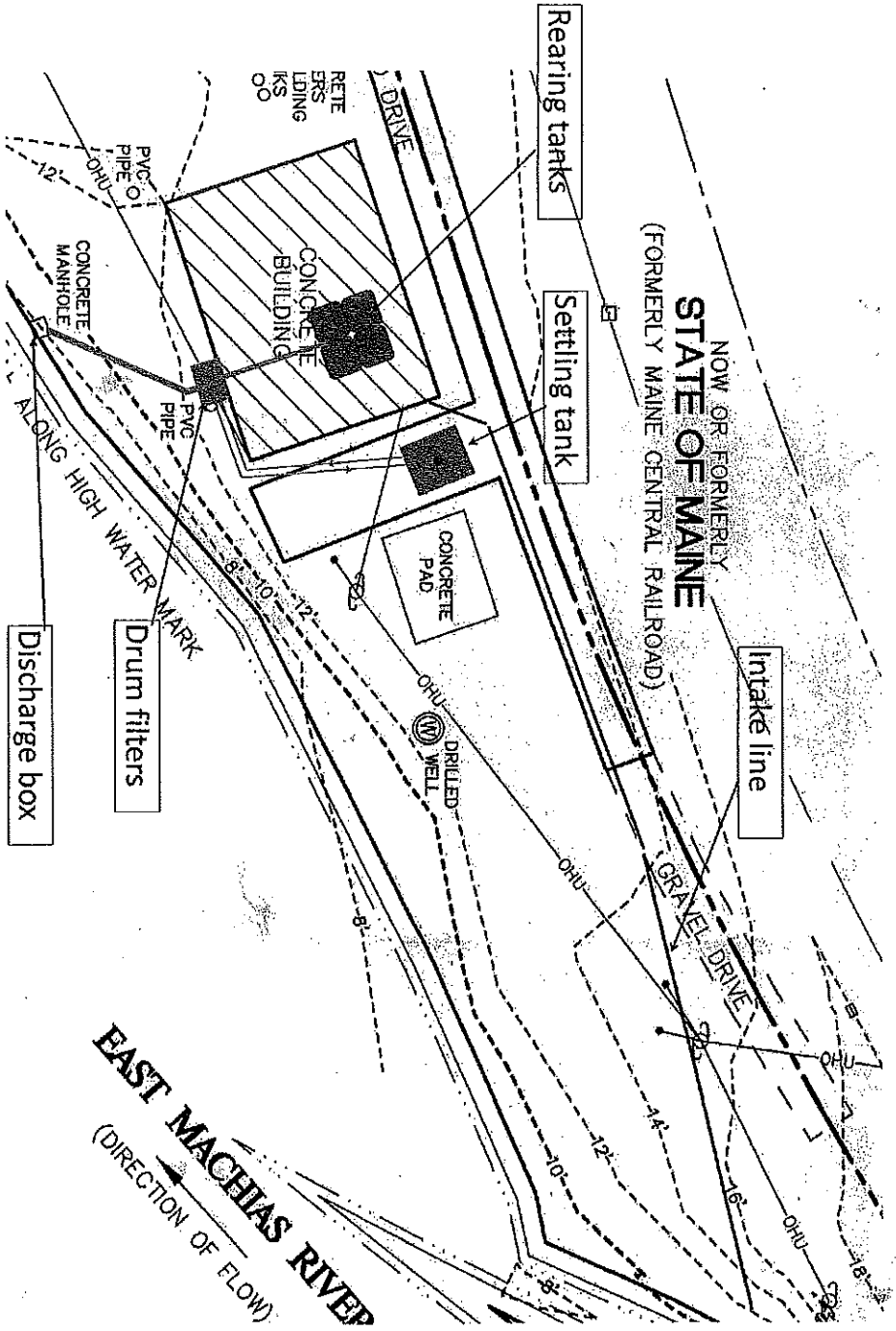


East Machias Aquatic Research Center
East Machias, ME

Map created by:
Bob Stratton
Division of Water Quality Management
Maine Department of Environmental Protection

ATTACHMENT B

(Facility Site Plans)


Rearing tanks
Settling tank
Intake line
Drum filters
Discharge box
NOW OR FORMERLY
STATE OF MAINE
(FORMERLY MAINE CENTRAL RAILROAD)
CONCRETE BUILDING
CONCRETE PAD
DRILLED WELL
GRAVEL DRIVE
PVC PIPE
CONCRETE MANHOLE
ALONG HIGH WATER MARK
EAST MACHIAS RIVER
(DIRECTION OF FLOW)
OHU

Downeast Salmon Federation's Peter Gray Hatchery – 13 Willow St. East Machias, Maine