



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCIO

GOVERNOR

DAVID P. LITTELL

COMMISSIONER

August 1, 2006

Mr. Dave Marsanskis
Grand Lake Stream State Fish Hatchery
Box 99
Grand Lake Stream, Maine 04637

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0001082
Maine Waste Discharge License (WDL) Application # W-002037-5Q-B-R
Final Permit/License

Dear Mr. Marsanskis:

Enclosed please find a copy of your **final** MEPDES permit and Maine WDL which was approved by the Department of Environmental Protection. Please read the permit/license and its attached conditions carefully. You must follow the conditions in the order to satisfy the requirements of law. Any discharge not receiving adequate treatment is in violation of State Law and is subject to enforcement action.

Any interested person aggrieved by a Department determination made pursuant to applicable regulations, may appeal the decision following the procedures described in the attached DEP FACT SHEET entitled "*Appealing a Commissioner's Licensing Decision.*"

The Department would like to make you aware that your monthly Discharge Monitoring Report (DMR) forms may not reflect the revisions in this permitting action for several months after permit issuance, however, you are required to report applicable test results for parameters required by this permitting action that do not appear on the DMR. Please see the attached April 2003 O&M Newsletter article regarding this matter.

If you have any questions regarding the matter, please feel free to call me at (207) 287-6114 or contact me via email at Robert.D.Stratton@maine.gov.

Sincerely,

Robert D. Stratton
Division of Water Quality Management
Bureau of Land and Water Quality

Enc./cc: Matt Young (MEDEP); Sandy Lao (USEPA)

AUGUSTA

17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 760-3143

DMR Lag

(reprinted from April 2003 O&M Newsletter)

When the Department renews discharge permits, the parameter limits may change or parameters may be added or deleted. In some cases, it is merely the replacement of the federally issued NPDES permit with a state-issued MEPDES permit that results in different limits. When the new permit is finalized, a copy of the permit is passed to our data entry staff for coding into EPA's Permits Compliance System (PCS) database. PCS was developed in the 1970's and is not user-friendly. Entering or changing parameters can take weeks or even months. This can create a lag between the time your new permit becomes effective and the new permit limits appearing on your DMRs. If you are faced with this, it can create three different situations that have to be dealt with in different ways.

1. If the parameter was included on previous DMRs, but only the limit was changed, there will be a space for the data. Please go ahead and enter it. When the changes are made to PCS, the program will have the data and compare it to the new limit.
2. When a parameter is eliminated from monitoring in your new permit, but there is a delay in changing the DMR, you will have a space on the DMR that needs to be filled. For a parameter that has been eliminated, please enter the space on the DMR for that parameter only with "NODI-9" (No Discharge Indicator Code #9). This code means monitoring is conditional or not required this monitoring period.
3. When your new permit includes parameters for which monitoring was not previously required, and coding has not caught up on the DMRs, there will not be any space on the DMR identified for those parameters. In that case, please fill out an extra sheet of paper with the facility name and permit number, along with all of the information normally required for each parameter (parameter code, data, frequency of analysis, sample type, and number of exceedances). Each data point should be identified as monthly average, weekly average, daily max, etc. and the units of measurement such as mg/L or lb/day. Staple the extra sheet to the DMR so that the extra data stays with the DMR form. Our data entry staff cannot enter the data for the new parameters until the PCS coding catches up. When the PCS coding does catch up, our data entry staff will have the data right at hand to do the entry without having to take the extra time to seek it from your inspector or from you.

EPA is planning significant improvements for the PCS system that will be implemented in the next few years. These improvements should allow us to issue modified permits and DMRs concurrently. Until then we appreciate your assistance and patience in this effort.



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

DEPARTMENT ORDER

IN THE MATTER OF

ME. DEPT. INLAND FISHERIES & WILDLIFE	) MAINE POLLUTANT DISCHARGE
GRAND LAKE STREAM FISH HATCHERY	) ELIMINATION SYSTEM PERMIT
GRAND LAKE STREAM, WASHINGTON COUNTY	) AND
FISH HATCHERY	)
#ME0001082	) WASTE DISCHARGE LICENSE
#W-002037-5Q-B-R	) RENEWAL
APPROVAL	

Pursuant to the provisions of the Federal Water Pollution Control Act, Title 33 USC, Section 1251, et. seq and Maine Law 38 M.R.S.A., Section 414-A et seq., and applicable regulations the Department of Environmental Protection (Department) has considered the application of the MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE GRAND LAKE STREAM FISH HATCHERY (hereinafter MDIFW Grand Lake Stream), with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

APPLICATION SUMMARY

The applicant has applied for a renewal of Waste Discharge License (WDL) #W-002037-5Q-A-R, which was issued on July 21, 2000, for a five-year term. The WDL approved the discharge of a maximum of 2.88 million gallons per day (MGD) of fish hatchery wastewater to Grand Lake Stream, Class A from a state fish hatchery and rearing facility in Grand Lake Stream, Maine. The applicant has applied for an increase in the effluent flow limit established in the previous licensing action.

PERMIT SUMMARY

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, excluding areas of special interest to Maine Indian Tribes. On October 30, 2003, after consultation with the U.S. Department of Justice, USEPA extended Maine's NPDES program delegation to all but tribally owned lands. The extent of Maine's delegated authority is under appeal at the time of this permitting action. From this point forward, the program will be referred to as the Maine Pollutant Discharge Elimination System (MEPDES) program and permit #ME0001082 will be utilized as the primary reference number for the Grand Lake Stream facility.

This permitting action is similar to the July 21, 2000 WDL in that it is carrying forward:

1. the monthly average and daily maximum reporting requirements for mass of fish on hand; and
2. the pH limit range of 6.0-8.5 standard units.

This permitting action is different from the July 21, 2000 WDL in that it is:

1. eliminating the 2.88 MGD daily maximum discharge flow limit and establishing a 2.9 MGD monthly average flow limit;
2. establishing BOD and TSS monthly average and daily maximum concentration limits with a provision for the Department to establish new limits in the future based on technology performance analyses of the industry as a whole;
3. establishing BOD and TSS monthly average mass limits based on previous WDL requirements and daily maximum mass limits based on revised concentration and flow limits;
4. establishing a year-round annual total phosphorus mass limit based on the assimilative capacity of Big Lake and monthly phosphorus mass reporting requirements;
5. establishing a seasonal total phosphorus monthly average concentration limit based on the assimilative capacity of Grand Lake Stream and a daily maximum phosphorus concentration reporting requirement;
6. establishing seasonal monthly average and daily maximum orthophosphate mass and concentration monitoring requirements during 2006;
7. converting previous mass limits and reporting requirements from pounds of pollutant per 100 pounds of fish on hand to pounds of pollutant per unit of time;
8. establishing a daily maximum mass limit for formalin based on Department best professional judgement (BPJ) and monthly average mass and concentration reporting requirements;
9. establishing a daily maximum concentration limit for formalin based on the previously established formaldehyde limit for three years followed by a revised concentration limit based on Department BPJ of formalin toxicity, to provide for infrastructure, operation, and maintenance upgrades as appropriate to insure compliance;
10. establishing a daily minimum effluent limit and monthly average and daily maximum monitoring requirements for effluent dissolved oxygen;
11. establishing a daily maximum water quality based limit for total residual chlorine;
12. establishing minimum monitoring frequency and sample type requirements based on BPJ;
13. restricting approved outfalls to #005A representing the accumulation of all facility discharges (filtration, hatchery, rearing facilities);
14. eliminating the reporting requirement for duration of discharge from raceway cleaning and influent filter backwash;
15. requiring a current facility Operation and Maintenance Plan;
16. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
17. establishing requirements for settling basin cleaning;
18. requiring compliance with existing state salmonid fish health rules;
19. establishing requirements related to proper use and record keeping of therapeutic agents;
20. establishing record keeping requirements for disinfecting/sanitizing agents;
21. establishing BPJ derived minimum treatment technology requirements for the facility; and
22. establishing requirements for ambient macroinvertebrate biomonitoring if MEDEP monitoring indicates non-attainment conditions;

CONCLUSIONS

BASED on the findings in the attached Fact Sheet dated June 29, 2006, 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, 38 MRSA Section 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 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 will be subject to effluent limitations that require application of best practicable treatment.
5. The discharge is necessary and there are no other practical alternatives available.

ACTION

THEREFORE, the Department APPROVES the above noted application of the MDIFW GRAND LAKE STREAM FISH HATCHERY to discharge fish hatchery wastewater consisting of a monthly average flow of 2.9 MGD to Grand Lake Stream, Class A, 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, copy attached.
2. The attached Special Conditions, including any effluent limitations and monitoring requirements.
3. This permit expires five (5) years from the date of signature below.

DONE AND DATED AT AUGUSTA, MAINE, THIS 1st DAY OF August, 2006.

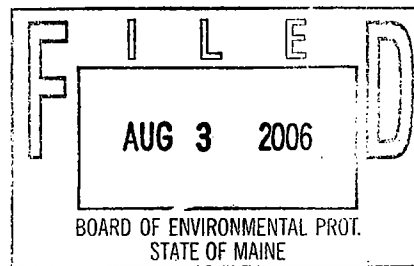
DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: David P. Littell, Commissioner for

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 27, 2005

Date of application acceptance: July 7, 2005



Date filed with Board of Environmental Protection

This Order prepared by Robert D. Stratton, BUREAU OF LAND & WATER QUALITY

W-002037-5Q-B-R / #ME0001082

July 31, 2006

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. The permittee is authorized to discharge fish hatchery wastewater from **Outfall #005A, representing the accumulation of all facility discharges (filtration, hatchery, rearing facilities)** to Grand Lake Stream. Such discharges shall be limited and monitored by the permittee as specified below¹:

Discharge Limitations and Reporting Requirements				Minimum Monitoring Requirements			
Monitoring Parameter	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	Daily Minimum as specified	Measurement Frequency as specified	Sample Type as specified
Flow [50050]	2.9 MGD [03]	---	---	---	---	Daily [01/01]	Measured [MS]
BOD ² [00310]	48 lbs/day [26]	242 lbs/day [26]	6 mg/L [19]	10 mg/L [19]	---	Once/2 weeks [01/14]	Composite ³ [CP]
TSS ² [00530]	48 lbs/day [26]	242 lbs/day [26]	6 mg/L [19]	10 mg/L [19]	---	Once/2 weeks [01/14]	Composite ³ [CP]
Total Phosphorus ⁴ [00665]	Report total lbs/month [76]	Maximum 504 lbs/year [50]	0.14 mg/L [19]	report mg/L [19]	---	Once/2 weeks [01/14]	Composite ³ [CP]
Orthophosphate (as P) ⁴ June 1 - Sept 30, 2006 [04175]	report lbs/day [26]	report lbs/day [26]	report mg/L [19]	report mg/L [19]	---	Once/2 weeks [01/14]	Composite ³ [CP]
Fish on Hand [45604]	report lbs/day [26]	report lbs/day [26]	---	---	---	Once/2 weeks [01/14]	Calculated [CA]
Formalin ⁵ Effective until June 30, 2009 [51064]	report lbs/day [26]	54.8 lbs/day [26]	report mg/L [19]	13.5 mg/L [19]	---	Once/2 weeks [01/14]	Calculated [CA]
Formalin ⁵ Beginning July 1, 2009 [51064]	report lbs/day [26]	54.8 lbs/day [26]	report mg/L [19]	2.5 mg/L [19]	---	Once/2 weeks [01/14]	Calculated [CA]
Dissolved Oxygen ⁶ From June 1 - Sept 30 yearly [00300]	---	---	report mg/L [19]	report mg/L [19]	7.5 mg/L [19]	1/week [01/07]	Measured [MS]
Total Residual Chlorine ⁷ [50060]	---	---	---	0.03 mg/L [19]	---	1/discharge day [01/DD]	Grab [GR]
pH [00400]	---	---	---	6.0-8.5 S.U. [12]	---	Once/2 weeks [01/14]	Grab [GR]

The italicized numeric values bracketed in the table above and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports (DMRs). Footnotes are found on Pages 7 and 8.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS, FOOTNOTES:

All sampling and analysis must be conducted 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 shall be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services unless otherwise approved by the Department. **All effluent limits are gross, end of pipe limits, unless otherwise specified.**

1. **Effluent Monitoring:** Effluent values shall be determined through a compilation of sampling data from all facility discharge points (filter, hatchery, and rearing facilities) following all means of wastewater treatment and designated as Outfall #005A. 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.
2. **BOD and TSS:** BOD and TSS effluent concentration limits are based on results of secondary level fish hatchery wastewater treatment, developed by EPA. It is the Department's intent to re-evaluate and potentially revise concentration limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology for the industry.
3. **Composite Samples:** Samples shall consist of 24-hour composites collected with an automatic composite sampler. Alternatively, when weather conditions and/or equipment prevents automatic compositing and upon Department approval, the permittee may manually composite a minimum of four grab samples collected at two-hour intervals during the working day at the facility.
4. **Total Phosphorus and Orthophosphate:** The concentration and mass effluent limits and monitoring requirements shall consist of gross, end-of-pipe values. **Phosphorus concentration** limits and monitoring requirements (mg/L) are seasonal and are only in effect from June 1 through September 30 each year. **Orthophosphate** monitoring requirements are only in effect from June 1 through September 30, 2006. **Phosphorus** mass limits and monitoring requirements (lbs) are in effect year-round. **The permittee is cautioned that compliance with concentration limits will not necessarily result in compliance with mass limits.** Laboratory analysis shall be conducted on the same sample and shall consist of a low-level phosphorus analysis with a minimum detection limit of 1 part per billion (1 ug/L).
5. **Formalin:** Formalin monitoring shall be conducted only when in use at the facility and shall consist of a calculated effluent value. The permittee shall calculate the effluent formalin concentration through accurate determinations of the formalin concentration administered in each facility use, the volume of water to which the formalin is added, and dilutions provided from administration to end-of-pipe. The effluent mass shall be calculated by multiplying the gallons of formalin used by a 9.13 lbs / gallon conversion formula based on the specific gravity of formalin. The permittee shall provide this information and calculations to the Department in a document accompanying the monthly DMR. See Fact Sheet Section 6f for sample calculations.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS, FOOTNOTES

(cont'd):

6. Supplemental Data Forms: In addition to specified DMR reporting requirements, the permittee shall submit all data from effluent dissolved oxygen monitoring to the Department in a supplemental report accompanying the appropriate monthly discharge monitoring report pursuant to Permit Special Conditions E.
7. Total Residual Chlorine (TRC): Shall be tested using Amperometric Titration or the DPD Spectrophotometric Method. The EPA approved methods are found in Standard Methods for the Examination of Water and WasteWater, (Most current edition), Method 4500-CL-E and Method 4500-CL-G or U.S.E.P.A. Manual of Methods of Analysis of Water and Wastes.

The limit at which compliance/non-compliance determinations will be based is the Minimum Level (ML) of detection. EPA Region I's Quality Assurance Office established a ML of 0.05 mg/L for TRC in April of 1992. All analytical test results shall be reported to the Department including results which are detected below the ML of 0.05 mg/L.

This permit may be re-opened per Special Condition O, *Reopening of Permit For Modification*, to lower the ML should a more sensitive test method(s) be approved by EPA and the State of Maine.

B. NARRATIVE EFFLUENT LIMITATIONS:

1. The effluent shall not contain a visible oil sheen, foam or floating solids at any time which would impair the usages designated by the classification of the receiving waters.
2. The effluent shall not contain materials in concentrations or combinations which are hazardous or toxic to aquatic life, or which would impair the usages designated by the classification of the receiving waters.
3. The discharges shall not cause visible discoloration or turbidity in the receiving waters which would impair the usages designated by the classification of the receiving waters.
4. Notwithstanding specific conditions of this permit the effluent must not lower the quality of any classified body of water below such classification, or lower the existing quality of any body of water if the existing quality is higher than the classification.

C. UNAUTHORIZED DISCHARGES:

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and monitoring of all discharges described herein shall be combined for the purpose of effluent monitoring and compliance and shall be designated as Outfall #005A. Discharges of wastewater from any other point source are not authorized under this permit, and shall be reported in accordance with Standard Condition B(5) (*Bypass*) of this permit.

SPECIAL CONDITIONS

D. NOTIFICATION REQUIREMENT:

In accordance with Standard Condition D, the permittee shall 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 shall include information on:
 - a. The quality or quantity of wastewater introduced to the waste water collection and treatment system; and
 - b. Any anticipated impact of the change in the quantity or quality of the wastewater to be discharged from the treatment system.

E. MONITORING AND REPORTING:

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report (DMR) forms provided by the Department and postmarked on or before the thirteenth (13th) day of the month or hand-delivered to a Department regional office such that the DMR's are received by the Department on or before the fifteenth (15th) day of the month following the completed reporting period. A signed copy of the DMR and all other reports required herein including reports required pursuant to Permit Special Conditions A (footnote 6), F, G, H, and N, shall be submitted to the Department's assigned compliance inspector at the following address:

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

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

On or before February 1, 2007, the permittee shall submit to the Department a current written comprehensive Operation & Maintenance (O&M) Plan [09699]. The plan shall provide a systematic approach by which the permittee shall 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.

SPECIAL CONDITIONS

F. OPERATION & MAINTENANCE (O&M) PLAN (cont'd):

The O&M Plan shall establish Best Management Practices (BMP) to be followed in operating the facility, cleaning the raceways/culture tanks, screens, and other equipment and disposing of any solid waste. The purpose of the BMP portion of the plan is to identify and to describe the practices which minimize the amounts of pollutants (biological, chemical, and medicinal) discharged to surface waters. Among other items, the plan shall describe in detail efficient feed management and feeding strategies to minimize discharges of uneaten feed and waste products, how and when the accumulated solids are to be removed, dewatered, and methods of disposal. The plan shall also describe where the removed material is to be placed and the techniques used to prevent it from re-entering the surface waters from any onsite storage. The plan shall document the recipients and methods of any offsite waste disposal.

By December 31 of each year, or within 90 days of any process changes or minor equipment upgrades, the permittee shall 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 shall be kept on-site at all times and made available to Department and EPA personnel upon request.

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

G. SCHEDULE OF COMPLIANCE

The Department is establishing a Schedule of Compliance for implementation of the following effluent limits and requirements established in this permitting action to provide for infrastructure, operation and maintenance upgrades as appropriate to insure compliance. The permittee has recently completed major renovations to numerous MDIFW facilities designed to improve both fish production and effluent quality and has requested a minimum of three years for implementation of more restrictive toxicity based effluent limits. MDIFW proposes to use this time to conduct a comprehensive evaluation of the structural and operational effectiveness of its wastewater discharge treatment systems and to conduct toxicity testing of formalin and potential alternative therapeutics. The permittee shall adhere to the specific required tasks and deadlines detailed below:

- 1. Technology and Water Quality Based Effluent Limitations:** The permittee shall ensure that the facility provides wastewater treatment equal to or better than the minimum treatment technology for all wastewater discharges and complies with all technology based effluent limitations, monitoring requirements, and operational requirements established in this permitting action **upon its effective date** and shall ensure that the facility complies with all new toxicity based limits (formalin) as prescribed below.

SPECIAL CONDITIONS

G. SCHEDULE OF COMPLIANCE (cont'd)

2. Formalin:

- A. On or before July 1, 2007**, the permittee shall submit to the Department for review and comment, facility wide plans (reports) to address operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit [34099]. The plans shall encompass methods, technologies, and implementation schedules for attainment of the formalin limits. For any alternatives involving design and construction, see Fact Sheet Attachment C for Department guidance on developing an Engineer's Facilities Planning Report.
- B. On or before February 1, 2008**, the permittee shall provide the Department with results of pilot testing and site investigations for the operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit. [63899]
- C. On or before July 1, 2008**, the permittee shall complete the design for any physical structure, equipment, and/or operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit, obtain all permits or licenses necessary for construction, and provide the Department with a report of the results [54299].
- D. On or before May 1, 2009**, the permittee shall complete construction and initiate startup of the operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit [91899].
- E. On or before July 1, 2009**, the operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit shall be fully operational and the revised formalin limits shall be in effect [52599].

H. ALTERNATIVE DISCHARGE STUDY:

On or before six-months prior to expiration of this permit, MDIFW Grand Lake Stream is required to submit to the Department for review, an Alternative Discharge Study (ADS) report for the Grand Lake Stream facility to determine if practical alternatives to the discharge exist. The ADS report shall evaluate wastewater treatment infrastructure, technologies, practices or other modifications that will result in the elimination of the discharge to the receiving water or improvement in the effluent quality, pursuant to guidance in Fact Sheet Section 9. [34099]

I. SETTLING BASIN CLEANING:

All wastewater settling structures shall be cleaned when accumulated materials occupy 20% of a basin's capacity, when material deposition in any area of the basins exceeds 50% of the operational depth, or at any time that said materials in or from the basins are contributing to a violation of permit effluent limits. The permittee is responsible for reporting effluent violations pursuant to Standard Conditions D.1 (f) and (g).

SPECIAL CONDITIONS

J. DISEASE AND PATHOGEN CONTROL AND REPORTING:

MDIFW Grand Lake Stream must comply with Maine Department of Inland Fisheries and Wildlife and Maine Department of Marine Resources salmonid 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 the event of a catastrophic pathogen occurrence, the permittee shall submit to the Department for review, information on the proposed treatment including materials/chemicals to be used, material/chemical toxicity to aquatic life, the mass and concentrations of materials/chemicals as administered, and the concentrations to be expected in the effluent. The Department will address such occurrences through administrative modifications of the permit.

K. THERAPEUTIC AGENTS:

All medicated fish feeds, drugs, and other fish health therapeutants shall be registered with USEPA as appropriate, approved by the US Food and Drug Administration (USFDA), and applied according to USFDA accepted guidelines and manufacturer's label instructions. 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 shall only be permitted in emergency situations when they are the only feasible treatments available and only under the authority of a veterinarian. **The permittee shall notify the Department in writing within 24-hours of such use.** This notification must be provided by the veterinarian involved and must include the agent(s) used, the concentration and mass applied, 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, the likely need of repeat treatments, and information on aquatic toxicity. 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 such use.

L. DISINFECTING/SANITIZING AGENTS:

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, shall 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 minimus in this permitting action or in subsequent Department actions.

SPECIAL CONDITIONS

M. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT:

Based on information provided and Department BPJ, the permittee shall provide minimum treatment technology for the Grand Lake Stream facility that shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, and removal of solids. MDIFW Grand Lake Stream shall provide treatment equal to or better than the BPJ minimum treatment technology and shall 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.

N. AMBIENT MACROINVERTEBRATE BIOMONITORING:

Based on available data, the Department is concerned with the effects of fish hatchery effluent discharges on rivers and streams in Maine. As macroinvertebrate communities provide indications of the overall ecological health of a receiving water, the Department has determined that biomonitoring is needed to better evaluate attainment of river and stream water classification standards and designated uses, resource impacts, and corrective measures when necessary. In order to address this need, the Department's Division of Environmental Assessment (MEDEP DEA) will conduct macroinvertebrate biomonitoring in the receiving water once during the term of this permitting action to determine attainment of the aquatic life standards. In the event that MEDEP DEA's biomonitoring indicates non-attainment of aquatic life standards in the receiving water, MDIFW Grand Lake Stream shall be required to conduct ambient macroinvertebrate biomonitoring annually thereafter. Prior to any such monitoring, MDIFW Grand Lake Stream shall be required to submit a biomonitoring plan for Grand Lake Stream to MEDEP DEA for review and approval, pursuant to Permit Special Condition O. The plan shall be consistent with "*Methods for Biological Sampling and Analysis of Maine's Rivers and Streams*" (DEP #LW0387-B2002, August 2002) and shall include a scope of work and schedule, monitoring locations and maps, methods and materials, and reporting procedures for the biomonitoring program. Biomonitoring shall be conducted according to a Department approved monitoring plan. Results shall be reported to the Department in a biomonitoring report by December 15 each year. If the receiving water is subsequently determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, the Department will reopen the permit pursuant to Permit Special Condition O, to modify or discontinue the biomonitoring requirement.

O. 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.

SPECIAL CONDITIONS

P. 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 shall remain in full force and effect, and shall 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
(Total phosphorus and orthophosphate protocols)

Protocol for Total P Sample Collection and Analysis for Waste Water and Receiving Water Monitoring Required by Permits

Approved Analytical Methods: EPA 365.2, SM 4500-P B.5 E

Sample Collection: The Maine DEP is requesting that total phosphorus analysis be conducted on composite effluent samples, unless a facility's Permit specifically designates grab sampling for this parameter. Facilities can use individual collection bottles or a single jug made out of glass or polyethylene. Bottles and/or jugs should be cleaned prior to each use with dilute HCL. This cleaning should be followed by several rinses with distilled water. The sampler hoses should be cleaned, as needed.

Sample Preservation: During compositing the sample must be at 0-4 degrees C. If the sample is being sent to a commercial laboratory or analysis cannot be performed the day of collection then the sample must be preserved by the addition of 2 mls of concentrated H_2SO_4 per liter and refrigerated at 0-4 degrees C. The holding time for a preserved sample is 28 days.

Note: Ideally, Total P samples are preserved as described above. However, if a facility is using a commercial laboratory then that laboratory may choose to add acid to the sample once it arrives at the laboratory. The Maine DEP will accept results that use either of these preservation methods.

QA/QC: Run a distilled water blank and at least 2 standards with each series of samples. If standards do not agree within 2% of the true value then prepare a new calibration curve.

Every month run a blank on the composite jug and sample line. Automatically, draw distilled water into the sample jug using the sample collection line. Let this water set in the jug for 24 hours and then analyze for total phosphorus. Preserve this sample as described above.

Finalized May 2006

Protocol for Orthophosphate Sample Collection and Analysis for Waste Water and Receiving Water Monitoring Required by Permits

Approved Analytical Methods: EPA 365.2, SM 4500-P.E

Sample Collection: The Maine DEP is requesting that orthophosphate analysis be conducted on composite effluent samples unless a facility's Permit specifically indicates grab sampling for this parameter. Facilities can use individual collection bottles or a single jug made out of glass or polyethylene. Bottles and/or jugs should be cleaned prior to each use with dilute HCL. This cleaning should be followed by several rinses with distilled water. The sampler hoses should be cleaned, as needed.

Sample Preservation: During compositing the sample must be at 0-4 degrees C. The sample must be filtered immediately (within 15 minutes) after collection using a pre-washed 0.45-um membrane filter. Be sure to follow one of the pre-washing procedures described in the approved methods. Also, be aware that you will likely want to use a designated suction hose and collection container for the orthophosphate filtering process. If the sample is being sent to a commercial laboratory or analysis cannot be performed within 2 hours after collection then the sample must be kept at 0-4 degrees C. There is a 48-hour holding time for this sample although analysis should be done sooner, if possible.

QA/QC: Run a distilled water blank and at least 2 standards with each series of samples. If standards do not agree within 2% of the true value then prepare a new calibration curve.

Every month run a blank on the composite jug and sample line. Automatically, draw distilled water into the sample jug using the sample collection line. Let this water set in the jug for 24 hours and then analyze for total phosphorus. Preserve this sample as described above.

Finalized May 2006

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

FACT SHEET

Date: June 29, 2006

MEPDES PERMIT NUMBER:
WASTE DISCHARGE LICENSE:

ME0001082
W-002037-5Q-B-R

NAME AND ADDRESS OF APPLICANT:

GRAND LAKE STREAM FISH HATCHERY
Maine Dept. of Inland Fisheries and Wildlife
284 State Street, 41 State House Station
Augusta, Maine 04333

COUNTY: WASHINGTON

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

GRAND LAKE STREAM FISH HATCHERY
Box 99
Grand Lake Stream, Maine 04637

RECEIVING WATER / CLASSIFICATION: Grand Lake Stream, Class A;
Big Lake, Class GPA

COGNIZANT OFFICIAL AND TELEPHONE NUMBER:

Mr. Dave Marsanskis Facility Manager (207) 796-5580
Mr. Steve Wilson, MDIFW Hatchery Supervisor (207) 287-5262

1. APPLICATION SUMMARY

The applicant has applied for a renewal of Waste Discharge License (WDL) #W-002037-5Q-A-R, which was issued on July 21, 2000, for a five-year term. The WDL approved the discharge of a maximum of 2.88 million gallons per day (MGD) of fish hatchery wastewater to Grand Lake Stream, Class A from a state fish hatchery and rearing facility in Grand Lake Stream, Maine. The applicant has applied for an increase in the effluent flow limit established in the previous licensing action.

2. PERMIT SUMMARY

- a. Regulatory - 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, excluding areas of special interest to Maine Indian Tribes. On October 30, 2003, after consultation with the U.S. Department of Justice, USEPA extended Maine's NPDES program delegation to all but tribally owned lands. The extent of Maine's delegated authority is under appeal at the time of this permitting action. From this point forward, the program will be referred to as the Maine Pollutant Discharge Elimination System (MEPDES) program and permit #ME0001082 will be utilized as the primary reference number for the Grand Lake Stream facility. Any previous NPDES permits issued by the EPA will be replaced by the MEPDES permit upon issuance. Once retired, all terms and conditions of any NPDES permits are null and void.
- b. Terms and conditions – This permitting action is similar to the July 21, 2000 WDL in that it is carrying forward:
1. the monthly average and daily maximum reporting requirements for mass of fish on hand; and
 2. the pH limit range of 6.0-8.5 standard units.

This permitting action is different from the July 21, 2000 WDL in that it is:

1. eliminating the 2.88 MGD daily maximum discharge flow limit and establishing a 2.9 MGD monthly average flow limit;
2. establishing BOD and TSS monthly average and daily maximum concentration limits with a provision for the Department to establish new limits in the future based on technology performance analyses of the industry as a whole;
3. establishing BOD and TSS monthly average mass limits based on previous WDL requirements and daily maximum mass limits based on revised concentration and flow limits;
4. establishing a year-round annual total phosphorus mass limit based on the assimilative capacity of Big Lake and monthly phosphorus mass reporting requirements;
5. establishing a seasonal total phosphorus monthly average concentration limit based on the assimilative capacity of Grand Lake Stream and a daily maximum phosphorus concentration reporting requirement;
6. establishing seasonal monthly average and daily maximum orthophosphate mass and concentration monitoring requirements during 2006;
7. converting previous mass limits and reporting requirements from pounds of pollutant per 100 pounds of fish on hand to pounds of pollutant per unit of time;
8. establishing a daily maximum mass limit for formalin based on Department best professional judgement (BPJ) and monthly average mass and concentration reporting requirements;

9. establishing a daily maximum concentration limit for formalin based on the previously established formaldehyde limit for three years followed by a revised concentration limit based on Department BPJ of formalin toxicity, to provide for infrastructure, operation, and maintenance upgrades as appropriate to insure compliance;
10. establishing a daily minimum effluent limit and monthly average and daily maximum monitoring requirements for effluent dissolved oxygen;
11. establishing a daily maximum water quality based limit for total residual chlorine;
12. establishing minimum monitoring frequency and sample type requirements based on BPJ;
13. restricting approved outfalls to #005A representing the accumulation of all facility discharges (filtration, hatchery, rearing facilities);
14. eliminating the reporting requirement for duration of discharge from raceway cleaning and influent filter backwash;
15. requiring a current facility Operation and Maintenance Plan;
16. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
17. establishing requirements for settling basin cleaning;
18. requiring compliance with existing state salmonid fish health rules;
19. establishing requirements related to proper use and record keeping of therapeutic agents;
20. establishing record keeping requirements for disinfecting/sanitizing agents;
21. establishing BPJ derived minimum treatment technology requirements for the facility; and
22. establishing requirements for ambient macroinvertebrate biomonitoring if MEDEP monitoring indicates non-attainment conditions;

c. History: The most recent licensing/permitting actions include the following:

February 20, 1975 – The USEPA issued NPDES Permit #ME0001082 to the Maine Department of Inland Fisheries and Game for the discharge of an unspecified volume of wastewater from the Grand Lake Stream Hatchery to Grand Lake Stream. The Permit was valid through February 15, 1980.

May 11, 1983 – The Maine Board of Environmental Protection issued WDL #2037 for the discharge of a daily maximum of 2.88 MGD of treated fish hatchery wastewater from the MDIFW Grand Lake Stream hatchery to Grand Lake Stream, Class B-1. The WDL was a renewal of an earlier WDL of the same number and was issued for a five-year term.

July 21, 2000 – The Department issued # W-002037-5Q-A-R to MDIFW Grand Lake Stream for the discharge of a daily maximum of 2.88 MGD of treated fish hatchery wastewater. The WDL was issued for a five-year term.

September 10, 2001 – The Department suspended monitoring requirements established in WDL # W-002037-5Q-A-R for Outfall #001A, designated for effluent discharges when not cleaning raceways. The Department required monitoring for Outfall #001B, designated for effluent discharges when cleaning raceways, to be conducted by autocomposer. The Department made no mention of Outfall #002A, previously designated for a summary of the

flow, mass of fish on hand, and total phosphorus (Kgs/month, Kgs/year) values from Outfalls #001A and #002A; Outfall #003A, previously designated for a summary of the total phosphorus (Kgs/day) values from Outfalls #001A and #002A; or Outfall #004A, previously designated for the flow, BOD, TSS, and duration of discharge from the facility's filter backwash.

October 26, 2001 – Based on a review of monitoring results, the Department suspended effluent limits and monitoring requirements established in WDL # W-002037-5Q-A-R for Outfall #004A, designated for the discharge of filter backwash.

February 2002 – On behalf of MDIFW, Fishpro Inc. submitted an Alternative Discharge Study report for all nine MDIFW hatcheries and rearing stations. The study evaluated eliminating effluent discharges through: piping the discharges to larger receiving waters, connecting to municipal wastewater treatment facilities, wastewater storage collection, land application of wastewater, and discharging to existing wetland areas. The study determined that none of the alternatives evaluated were viable options for the MDIFW facilities.

September 12, 2002 – The Department submitted a report entitled *Maine Department of Environmental Protection Water Quality Concerns and Effects from State Fish Hatchery Discharges* to the Maine Legislature's Inland Fisheries and Wildlife Subcommittee's Commission to Study the Needs and Opportunities Associated with the Production of Salmonid Sport Fish in Maine and MDIFW.

November 2002 – FishPro Inc. submitted to MDIFW its *Comprehensive Statewide Fish Hatchery System Engineering Study* addressing recommended upgrades to all MDIFW fish hatcheries and rearing facilities.

July 11, 2003 – The Department administratively modified WDL # W-002037-5Q-A-R to extend the 3-year schedule of compliance for BOD, TSS, and phosphorus effluent limits established in the WDL through the life of the WDL.

June 27, 2005 - The Department received a timely application from MDIFW for renewal of the WDL for the discharge of fish hatchery wastewater from the Grand Lake Stream facility. The application was assigned WDL #W-002037-5Q-B-R and MEPDES permit #ME0001082.

d. Source Description/ Facility Operation:

The MDIFW Grand Lake Stream State Fish Hatchery was constructed in 1936 as a state aquaculture facility and is located on a 13-acre parcel of state owned land. Portions of the facility were added and/or renovated in the 1960s, 1970s, and 1980s. The MDIFW Grand Lake Stream facility is a state landlocked Atlantic salmon and brook trout hatchery and rearing facility, raising and stocking West Grand Lake strain salmon and Maine hatchery strain brook trout as part of MDIFW's responsibilities in managing fisheries in Maine. Salmon eggs used for hatching and rearing are obtained from up to 1,200 wild fish captured

annually in the fall (October) in West Grand Lake. Captured fish are held in a floating net pen and returned to the lake following egg-stripping. The eggs are used at MDIFW Grand Lake Stream and at other MDIFW hatcheries as needed. Additionally, MDIFW Grand Lake Stream maintains broodstock salmon on site as a back up to the wild capture program. Salmon are raised and stocked out as fall yearlings, spring yearlings, and adult retired broodstock, as well as supplied to other facilities as fall fingerlings, as described below. Brook trout are not hatched on site, but are received from other MDIFW hatcheries, such as MDIFW Enfield, as fall fingerlings in October-November, raised over the winter at MDIFW Grand Lake Stream, and stocked into lakes and streams in May-June each year. MDIFW Grand Lake Stream consists of an influent water Ultra-Violet (UV) disinfection / filter building, a hatchery building, and two lines of covered raceway pools for rearing.

Influent Water: The MDIFW Grand Lake Stream hatchery and rearing station obtains its influent water from West Grand Lake, a 14,340-acre lake with a maximum depth of 128-feet. The lake is a dam controlled impoundment, used by Domtar Corp. for storage for downstream hydroelectric generation. Influent water is obtained through a 24-inch diameter iron pipe that intakes approximately 800-feet upstream of the dam at a depth of 15-20-feet. The intake is fitted with a coarse screen, which must be cleaned by a diver approximately once every two years. Influent water passes through the MDIFW Grand Lake Stream facility's UV disinfection / filter system, which limits the influent flow to 2,000 gallons per minute (gpm). The UV disinfection system consists of two units of 88 UV lamps per unit. The UV units are used in parallel with each treating a maximum influent flow of 1,000 gpm. The filtering system consists of a 10-micron drum screen. The filter is constantly backwashed to remain clean and efficient. Each spring at a frequency of one to two times per week and sporadically throughout the year, the filter is cleaned with calcium hypochlorite and de-chlorinated with sodium thiosulfate to prevent clogging, as described in Fact Sheet Section 6h. The disinfection/filtration system has significantly reduced past problems with disease and siltation. The influent pipe reduces from 24-inches to 12-inches in diameter in the filter building, then flows to the headboxes of the two raceway lines for distribution. Disinfected and filtered water is pumped to the hatchery building to supply its water needs.

MDIFW Grand Lake Stream is a flow-through facility with flows through its hatchery and rearing facilities discharged to Grand Lake Stream, a Class A water and tributary to Big Lake, Class GPA.

Hatchery Facilities: MDIFW Grand Lake Stream's hatchery facility consists of forty-two aluminum raceways, that are 8-feet x 14-inches x 6-inches (operational depth) (35-gallons each). The raceways are used for incubation, fry capture, and early rearing. The raceways are arranged in seven sets of two parallel lines (14 lines) of 3 flow-through units. A fifteenth line is used for a "water alarm" and contains no fish. The flow rate for the indoor raceways is 6 gpm or 90 gpm total. Water within the indoor units flows down through each of the three troughs in each line before being discharged. Salmon eggs are introduced into the hatchery in November of each year, hatch in April, and the fry begin being fed by automatic feeders in May-June. After hatching, screens are inserted into the troughs to contain the approximately 80,000 salmon fry kept in the hatchery facility. Fry are moved to the rearing facility raceways in June after MDIFW Grand Lake Stream's spring yearling salmon are

stocked out. The hatchery facility is then shut down until October when new eggs are brought on station.

Broodstock Facilities: MDIFW Grand Lake Stream maintains approximately 750 salmon broodstock in the final two raceway pools. New broodstock year classes are started every two years and old broodstock classes are retired after four years, with the fish stocked in various waters.

Rearing Facilities: MDIFW Grand Lake Stream's rearing facilities consist of two lines of seven, 100-foot x 8-foot x 2-foot (operational depth) (12,000 gallons each) covered concrete raceway pools. Salmon fry are moved from the hatchery facility to the raceways in June. Of the fourteen raceway pools, ten are used for salmon fry, two are used for fall yearlings, and two are used for broodstock. In October of each year, fall yearling salmon are stocked in various waters, a portion of the fall fingerling salmon are shipped to the MDIFW Embden rearing station, and brook trout are received on station. The brook trout are housed in raceway space vacated by the salmon. In May-June each year, spring yearling salmon and brook trout are stocked in various waters and the cycle continues as described above.

Fish are fed by automatic feeders within the hatchery facility and for the first month they are in the raceways. Larger fish in the raceways are fed by demand-type feeders. Supplemental hand feeding is conducted as needed. MDIFW Grand Lake Stream indicates using an average of 57.4 pounds of food per day, a maximum of 133.5 lbs/day, and a period of peak feeding during September and October. MDIFW Grand Lake Stream indicates an approximate maximum quantity of fish on station of: 52,690 spring yearling salmon weighing 7,770 pounds, 15,525 spring yearling trout weighing 6,900 pounds, and 2,000 fall yearling salmon weighing 1,034 pounds.

e. Wastewater Treatment:

Rearing facility flow-through water passes through each raceway pool and is discharged through a common outfall pipe to Grand Lake Stream. Hatchery facility flow-through and cleaning wastewater, UV/filter building wastewater, and rearing facility cleaning wastewaters are discharged to Grand Lake Stream through 9 separate outfall pipes with one serving the hatchery building, one serving the UV/filter building, and one located at the bottom of each of the seven raceway pools. The hatchery troughs are cleaned twice daily when fry are being fed. Hatchery flow-through and cleaning wastewater is routed to Grand Lake Stream without treatment. For rearing facility cleaning, MDIFW staff has historically scrubbed the sides and bottoms from the top end of the raceway pool moving down-flow toward the bottom end. At the bottom of all raceway pools is located a screened 1.5-foot long "quiescent zone" with a covered discharge pipe routed through a 15-inch diameter iron pipe, outletting above mean low water. When approximately half of the pool's length is cleaned, the discharge pipe "plug" is removed, sending cleaning flows to the receiving water without treatment. After the raceway pool and quiescent zone screen are cleaned, the quiescent zone plug is replaced and the cleaners move to the next raceway pool. MDIFW

Grand Lake Stream indicates that it takes approximately 20 minutes to clean each raceway pool. All raceway pools are cleaned three times per week during the summer and once every week during the non-summer period, as needed. The facility's hatchery building outfall is a 4-inch diameter black plastic pipe outletting one-foot below mean low water. The UV/filter building outfall is a 6-inch diameter cast iron pipe outletting one foot above mean low water. The rearing facility's end discharge is through a 20-foot x 15-foot x 2-foot deep (4,500-gallon) settling basin then through a 28-inch diameter galvanized culvert outletting one-foot below mean low water. Regardless of the scenarios and infrastructure described, MDIFW Grand Lake Stream's discharge is at all times subject to the effluent limitations and monitoring requirements established in this permitting action.

Use of agents for therapeutic and disinfecting/sanitizing purposes are addressed in subsequent Fact Sheet sections titled accordingly.

3. CONDITIONS OF PERMITS

Maine law, 38 M.R.S.A. Section 414-A, requires that the effluent limitations prescribed for discharges, including, but not limited to, effluent toxicity, require application of best practicable treatment (BPT), be consistent with the U.S. Clean Water Act, and ensure that the receiving waters attain the State water quality standards as described in Maine's Surface Water Classification System. In addition, 38 M.R.S.A., Section 420 and Department rule 06-096 CMR Chapter 530, *Surface Water Toxics Control Program*, require the regulation of toxic substances not to exceed levels set forth in Department rule 06-096 CMR Chapter 584, *Surface Water Quality Criteria for Toxic Pollutants*, 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:

Maine law, 38 M.R.S.A., Section 467.13.B(1) classifies Grand Lake Stream at the point of discharge as a Class A water. Maine law, 38 M.R.S.A., Section 465.2, describes the standards for Class A waters. In 1985, the Maine Legislature amended the water classification statute upgrading Grand Lake Stream from Class B-1 to Class A. On January 24, 1996 regarding three commercial fish hatcheries / rearing facilities in like situation, the Department interpreted the Legislature's intent to "grandfather" the discharge existing at that time from the Class A requirement that the effluent be of equal or better quality than the receiving water. See Fact Sheet Section 6 for clarification of this grandfathering.

Big Lake is classified as a Class GPA water pursuant to Maine law, 38 M.R.S.A., Section 465-A. Therefore, Grand Lake Stream at the point of discharge, being approximately 2 miles upstream of Big Lake, entails a tributary to a GPA water. Maine law, 38 M.R.S.A., Section 464.4.A states, "...the department may not issue a water discharge license for..." (2) a "New direct discharge of domestic pollutants to tributaries of Class-GPA waters" or

(3) “Any discharge into a tributary of GPA waters that by itself or in combination with other activities causes water quality degradation that would impair the characteristics and designated uses of downstream GPA waters or causes an increase in the trophic state of those GPA waters”.

5. RECEIVING WATER QUALITY CONDITIONS:

The previous licensing action stated, “(a)ccording to available information Grand Lake Stream is attaining the standards of its classification. According to available information Big Lake is attaining the standards of its classification”. The State of Maine 2004 *Integrated Water Quality Monitoring and Assessment Report* (DEPLW0665), prepared pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act includes the receiving water in the designation *Grand Lake Stream and tributaries* (Assessment Unit ME0105000103, Segment ID 502R), listed in Category 2, Rivers and Streams Attaining Some Designated Uses – Insufficient Information for Other Uses. The listing identifies a 230.5 mile segment of Class A and B waters, monitored in 2001. Department biomonitoring conducted in Grand Lake Stream both upstream and downstream of the Grand Lake Stream facility in 2001 revealed that the macroinvertebrate communities are only indicative of Class B waters due to natural effects from West Grand Lake located upstream. The 303(d)/305(b) report also includes the downstream water Big Lake (HUC ME0105000105) in both Category 1, Lake Waters Fully Attaining All Designated Uses (1,417 acres), and Category 2, Lake Waters Attaining Some Designated Uses – Insufficient Information for Other Uses (10,334 acres), through sampling conducted in 1999 and 2001 respectively. All freshwaters in Maine are listed as only partially attaining the designated use of recreational fishing due to a fish consumption advisory (Category 5-C). The advisory was established in response to elevated levels of mercury in some fish caused by atmospheric deposition. The Department has no information that the Grand Lake Stream facility causes or adversely contributes to the consumption advisory or to the incomplete attainment statuses of Grand Lake Stream or Big Lake. However, due to ongoing concerns with the effects of fish hatchery discharges on receiving waters, this permitting action is establishing effluent limitations, monitoring and operational requirements accordingly, including requirements for ambient macroinvertebrate biomonitoring (Permit Special Condition N).

If it is determined that non-attainment conditions exist in the receiving water(s) and that MDIFW Grand Lake Stream causes or contributes to those conditions, this permitting action may be reopened pursuant to Permit Special Condition O and effluent limitations, monitoring and operational requirements, and/or wastewater treatment requirements adjusted accordingly.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS:

On June 30, 2004, USEPA finalized the Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (National Effluent Guidelines). The earlier September 12, 2002 proposed National Effluent Guidelines (NEGs) and subsequent working draft NEGs established numerical limitations for the discharge of TSS and requirements for facilities to develop and implement best management practices (BMP) plans for control of other pollutants.

In the final NEGs, EPA expressed effluent limitations in the form of narrative standards, rather than as numerical values. The final NEGs require facilities to develop and implement BMPs regarding operation and maintenance of the facility, as does this permitting action. EPA stated that it determined it more appropriate to promulgate limits “...*that could better respond to regional and site-specific conditions and accommodate existing state programs in cases where these appear to be working well.*” The final NEGs reference a section of the federal Clean Water Act inclusive of 40 CFR, Part 125.31(f), which states, “*Nothing in this section shall be construed to impair the right of any State or locality under section 510 of the Act to impose more stringent limitations than those required by Federal law.*” Section 510 states, “*Except as expressly provided in this Act, nothing in this Act shall (1) preclude or deny the right of any State...to adopt or enforce...any standard or limitation respecting discharges of pollutants, or...any requirement respecting control or abatement of pollution; except that if an effluent limitation...or standard of performance is in effect under this Act, such State...may not adopt or enforce any effluent limitation...or standard of performance which is less stringent than the effluent limitation...or standard of performance under this Act; or (2) be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters...of such States*”.

Pursuant to Maine Law (38 M.R.S.A., §414-A.1), the Department shall only authorize discharges to Maine waters when those discharges, either by themselves or in combination with other discharges, “*will not lower the quality of any classified body of water below such classification*”. Further, “*the discharge will be subject to effluent limitations that require application of the best practicable treatment*”. “*Best practicable treatment (BPT) means the methods of reduction, treatment, control and handling of pollutants, including process methods, and the application of best conventional pollutant control technology or best available technology economically available, for a category or class of discharge sources that the department determines are best calculated to protect and improve the quality of the receiving water and that are consistent with the requirements of the Federal Water Pollution Control Act*” (40 CFR). “*If no applicable standards exist for a specific activity or discharge, the department must establish limits on a case-by-case basis using best professional judgement...*” considering “*...the existing state of technology, the effectiveness of the available alternatives for control of the type of discharge and the economic feasibility of such alternatives...*”. Pursuant to 38 M.R.S.A., §414-A.1 and §464.4, the Department regulates wastewater discharges through establishment of effluent limitations and monitoring requirements that are protective of Maine waters.

Between calendar years 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. Based on the information provided and Department best professional judgement (BPJ), the Department is specifying that minimum treatment technology for the MDIFW Grand Lake Stream facility shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, and removal of solids (Permit Special Condition M, Fact Sheet Section 14). MDIFW Grand Lake Stream shall provide treatment equal to or better than the BPJ minimum treatment technology and shall 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.

In a January 24, 1996 letter, the Department addressed the issue of applicable effluent and water quality standards for those licensed discharges existing when a receiving water classification is upgraded from Class B to Class A, as was the case for the MDIFW Grand Lake Stream facility. Class A water standards (38 MRSA, Section 465.2(C)) require that the effluent from direct discharges licensed after January 1, 1986, must "be equal to or better than the existing water quality of the receiving waters" and that discharges licensed before January 1, 1986, "are allowed to continue only until practical alternatives exist". Based on the Department's 1996 letter and as clarified in 2004, for those existing licensed discharges the Department will apply the more stringent of the previous discharge license effluent limits or newly calculated BPT or water quality based effluent limits, taking into consideration past demonstrated effluent performance, in lieu of the "equal to or better" standard. The aquatic life, bacteria, and dissolved oxygen standards applicable to the previous discharge license (Class B standards) will be carried forward until the receiving water is able to meet Class A standards. The licensee/permittee must conduct an Alternative Discharge Study at least prior to each relicensing to determine if the discharge can be eliminated or if there is treatment technology and/or practices available that will result in improved effluent and receiving water quality, ultimately resulting in attainment of Class A standards. All new discharges of pollutants or increases in pollutants in a licensed/permitted facility's existing discharge, excluding flow, must meet all Class A standards. Effluent limits and monitoring requirements in this permitting action are being developed accordingly.

The previous licensing action established the following outfall designations and corresponding processes: Outfall #001A for effluent discharges when not cleaning raceways; Outfall #001B for effluent discharges when cleaning raceways; Outfall #002A for a summary of the flow, mass of fish on hand, and total phosphorus (Kgs/month, Kgs/year) values from Outfalls #001A and #002A; Outfall #003A for a summary of the total phosphorus (Kgs/day) values from Outfalls #001A and #002A; and Outfall #004A for the flow, BOD, TSS, and duration of discharge from the facility's filter backwash. Additional outfalls were established to correspond to locations and timings of in-stream water quality monitoring, and are addressed in the corresponding Fact Sheet section. This permitting action is revising outfall designations in an attempt to simplify and improve the accuracy of effluent

compliance and tracking. In reality, MDIFW Grand Lake Stream currently discharges its filter backwash wastewater through one outfall, its hatchery facility flow-through and cleaning wastewater through a second outfall, its rearing facility flow-through water and cleaning wastewater for the final pair of raceway pools through a third outfall, and its cleaning wastewater for the remainder of its raceway pools through six more separate outfalls, for a total of nine facility outfalls, most without adequate wastewater treatment. As established in this permitting action, effluent values shall be determined through a compilation of sampling data from all facility discharge points (filter, hatchery, and rearing facilities) and designated as Outfall #005A.

- a. Flow: The previous licensing action established a daily maximum flow discharge limit of 2.88 MGD and a requirement to monitor and report the monthly average discharge flow. Discharge flow was required to be measured at a frequency of once per month. The previous licensing action established effluent limits and monitoring requirements for discharge flow for Outfalls #001A, #001B, #002A, and #004A as described above. As all of these processes were assumed to be distinctly separate, the 2.88 MGD limit was established for each outfall designation. In September and October 2001, the Department suspended monitoring requirements and effluent limits for Outfalls #001A and #004A, respectively, as described in Fact Sheet Section 2c. The previous licensing action established an Effluent Limitation Compliance Schedule that required compliance with effluent limits within three years of the effective date of the WDL and delayed imposition of the limits until that time. The WDL compliance schedule was administratively modified also as described in Fact Sheet Section 2c. MDIFW has requested an increase in the discharge flow limit. In this permitting action, the Department is eliminating the daily maximum flow limit and establishing a monthly average flow limit of 2.9 MGD based on information provided by MDIFW on facility operations and design capacity and to provide the facility with operational flexibility. However, since Grand Lake Stream is a Class A water, in which any new pollutant discharges must be equal to or better than ambient water quality, and a tributary to a Class GPA water, in which no new direct discharges of pollutants are allowed, mass pollutant limits shall be limited pursuant to the "grandfathering" provisions above and as described below. This permitting action requires daily measurement of discharge flow, consistent with Department guidelines for wastewater treatment facility discharges.
- b. Dilution Factors: Dilution factors associated with wastewater discharges are derived in accordance with freshwater protocols established in Department Regulation Chapter 530, Surface Water Toxics Control Program, October 2005 and 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 MDIFW Grand Lake Stream facility discharges its treated effluent via nine separate discharge pipes into the side of Grand Lake Stream, as described above. 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. Chapter 530.4.B(1) states that analyses using numeric acute criteria for aquatic life must be based on $\frac{1}{4}$ 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. In developing the previous WDL, the Department utilized a chronic dilution of 23.4:1 based on a 7Q10 low flow value of 64.6 MGD indicated as a guaranteed minimum flow and MDIFW Grand Lake Stream's daily maximum discharge limit of 2.88 MGD. However, this approach appears to have been incorrect.

The West Grand Lake dam is owned and operated by Domtar, Corp. as a storage dam to provide for downstream hydroelectric generation. Operation of the dam is subject to a US Federal Energy Regulatory Commission (FERC) license (#2618) issued to the previous owner, Georgia Pacific Corporation on September 4, 1980, with annual automatic renewals until a new license is issued. The West Grand Lake development is described as *"(i) West Grand Lake Dam, an earth embankment and gravel-filled timber crib structure, 485 feet long and 13 feet high, containing a gated spillway structure, 77 feet wide with 5 gates, and a fish passage facility, 24 feet wide; (ii) a reservoir with surface area of 23,825 acres at elevation 301.43 feet m.s.l., and storage capacity of 160,000 acre-feet; and (iii) other appurtenances"*. Article 34 of the FERC license states, the licensee *"shall discharge from West Grand Lake a contin(u)ous minimum flow of 100 cfs (cubic feet per second) or a flow equal to the inflow to the Lake, whichever is less for the purpose of protecting and enhancing fishery resources in West Branch of the St. Croix River"*. This does not constitute a guaranteed instantaneous minimum flow to Grand Lake Stream.

Based on the methods for deriving dilution factors described above and the monthly average flow limitation of 2.9 MGD, the Department calculates dilution factors for MDIFW Grand Lake Stream as follows:

$$\text{Mod. Acute: } \frac{1}{4} \text{ 1Q10} = 2.76 \text{ cfs} \quad \Rightarrow \frac{(2.76 \text{ cfs})(0.6464) + 2.9 \text{ MGD}}{2.9 \text{ MGD}} = 1.6:1$$

$$\text{Acute: 1Q10} = 11.05 \text{ cfs} \quad \Rightarrow \frac{(11.05 \text{ cfs})(0.6464) + 2.9 \text{ MGD}}{2.9 \text{ MGD}} = 3.5:1$$

$$\text{Chronic: 7Q10} = 13.0 \text{ cfs} \quad \Rightarrow \frac{(13.0 \text{ cfs})(0.6464) + 2.9 \text{ MGD}}{2.9 \text{ MGD}} = 3.9:1$$

$$\text{Harmonic Mean} = 39.0 \text{ cfs} \quad \Rightarrow \frac{(39.0 \text{ cfs})(0.6464) + 2.9 \text{ MGD}}{2.9 \text{ MGD}} = 9.7:1$$

As described above, MDIFW Grand Lake Stream's discharges do not achieve rapid and complete mixing. Thus, the Department is utilizing the default stream flows of $\frac{1}{4}$ of the 1Q10 pursuant to Chapter 530 in acute evaluations. If MDIFW has other information

addressing a true guaranteed instantaneous minimum flow or establishes such with the owner/operator of the West Grand Lake dam, this determination may be revisited. Further analysis and modification of these dilutions may also be necessary based on any conditions established in future FERC licenses for the West Grand Lake dam, pursuant to Permit Special Condition O.

- c. BOD and TSS: The previous licensing action contained monthly average concentration limits of 2 mg/L and monthly average mass reporting requirements in pounds of pollutant per 100 pounds of fish on hand for both biochemical oxygen demand (BOD) and total suspended solids (TSS) for Outfalls #001A and #001B. Monitoring requirements consisted of a composite of a minimum of four grab samples collected at two hour increments during a facility working day at a frequency of once per month. Daily maximum BOD and TSS limits of 60 mg/L and monthly grab sampling were required for Outfall #004A. In September and October 2001, the Department suspended monitoring requirements and effluent limits for Outfalls #001A and #004A, respectively, as described in Fact Sheet Section 2c. The previous licensing action established an Effluent Limitation Compliance Schedule that required compliance with effluent limits within three years of the effective date of the WDL and delayed imposition of the limits until that time. The WDL compliance schedule was administratively modified also as described in Fact Sheet Section 2c.

In licensing actions for twelve state and commercially owned fish hatcheries in 1999 and 2000, the Department established monthly average concentration limits for BOD and TSS of 2 mg/L based on the Department's best professional judgement of best practicable treatment (BPJ of BPT) limits. The BPT limits were developed based on the Department's analysis of effluent data from licensed fish hatcheries in Maine supplied through Discharge Monitoring Reports (DMRs). Based on this analysis, the Department determined that the concentration limits of 2 mg/L constituted achievable levels of these pollutants in fish hatchery wastewater. The Department also required that the BOD and TSS effluent mass be monitored and reported in pounds per 100 pounds of fish on hand. Through extensive facility inspections in 2002, the Department discovered significant variability in facility effluent sampling procedures, calling into question the validity of submitted DMR data, the previous data analysis, and the Department's previous assumptions and conclusions.

In the 2002 proposed NEG, EPA recommended national TSS effluent limitations for recirculating and flow-through hatcheries of various designs and levels of production. The most restrictive recommended limits were based on a secondary level of fish hatchery wastewater treatment and consisted of a monthly average limit of 6 mg/L and a daily maximum limit of 10 mg/L. The 2002 proposed draft NEG did not propose to regulate BOD as EPA believed it would be managed through best management practices at the hatcheries and treatment for TSS.

According to EPA's final NEG's, effluent from fish hatcheries and rearing facilities can contain "...*high concentrations of suspended solids and nutrients, high BOD and low dissolved oxygen levels. Organic matter is discharged primarily from feces and uneaten feed*". As stated in the 2002 proposed NEG's, "*elevated levels of organic compounds contribute to eutrophication and oxygen depletion.*" This is expressed as BOD "...*because oxygen is consumed when microorganisms decompose organic matter*". "*The greater the BOD, the greater the degree of pollution and the less oxygen available.*" The discharge of high BOD wastewater to small receiving waters with insufficient dilutions can result in formation of oxygen deficient areas known as sag points. Oxygen sag points represent both localized impacts to habitat and aquatic life as well as barriers to migration throughout the receiving water. Based on this premises and a long standing practice of regulating effluent BOD, the Department considers BOD a significant pollutant and therefore is establishing effluent limitations and monitoring requirements.

In this permitting action the Department is establishing a BPJ of minimum treatment technology for the MDIFW Grand Lake Stream facility. (Permit Special Conditions M, Fact Sheet Section 14). BOD and TSS concentration limits of 6 mg/L for monthly average and 10 mg/L for daily maximum shall be in effect for Outfall #005A. These numbers are based on fish hatchery wastewater secondary treatment projections and the Department's judgement that effluent BOD should also be regulated. The Department has evaluated actual and projected post-facility upgrade effluent quality data for a significant number of fish hatcheries in Maine and determined that facilities incorporating the minimum treatment technology outlined can be expected to consistently meet the BOD and TSS concentration limits established in this permitting action. It is the Department's intent to re-evaluate and potentially revise limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology for the industry. The Department reserves the right to reopen facility discharge permits to establish these limits pursuant to Special Condition O of this permit.

Pursuant to 38 M.R.S.A., § 465.2(C), discharges into Class A waters "*...licensed after January 1, 1986, are permitted only if...the discharged effluent will be equal to or better than the existing water quality in the receiving water. Discharges ...licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist*". Additionally, 38 M.R.S.A., Section 464.4.A, states, "*...the department may not issue a water discharge license for...*" (2) a "*New direct discharge of domestic pollutants to tributaries of Class-GPA waters*". Pursuant to this and the Department's upgrade "grandfathering" determination described in Fact Sheet Section 6, any new or increased discharges of pollutants beyond those and their levels included in the previous licensing action are considered as new discharges. Thus, effluent mass limits are being held to no more than prior licensed levels. To calculate applicable mass limits for BOD and TSS, the Department is utilizing the previous WDL monthly average concentration limits of 2 mg/L (ppm), the previous maximum flow limit of 2.88 MGD, and a conversion factor of 8.34 lbs / gallon to yield monthly average mass limits of 48 lbs/day. The daily maximum mass limits are based on the newly established daily maximum concentration limits of 10 mg/L, new monthly average flow limit of 2.9 MGD, and a conversion factor of 8.34 lbs / gallon to yield 242 lb/day daily maximum limits. The Department anticipates that the

monthly average mass limits will be limiting factors for the MDIFW Grand Lake Stream discharge, thus meeting the provisions of 38 M.R.S.A., Section 464.4.A noted above. As the number and mass of fish on station increases, MDIFW Grand Lake Stream may need to provide additional wastewater treatment that will hold effluent quality constant.

In this permitting action, mass is limited in the more conventional unit of pounds per day instead of the previous pounds per hundred pounds of fish on hand. This permitting action establishes once per two week effluent BOD and TSS monitoring on a year round basis based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.

- d. Total Phosphorus and Orthophosphate: Phosphorus is a nutrient that encourages the growth of plants such as planktonic algae and macrophytes in northern waters. Oxygen levels in the water are reduced in the early morning hours due to extended nighttime respiration of algae. The decomposition of excess plant material further reduces the amount of available oxygen in the water through biochemical oxygen demand. Lowering oxygen levels in a receiving water impacts the aquatic life in that water, making it unfit for some forms of life. Further, enrichment from excess nutrients, such as phosphorus, can result in reductions in aquatic macro-invertebrate species diversity, an indicator of the overall health of a receiving water. Excess phosphorus can also result in undesirable aesthetic conditions in a receiving water, impacting that water's ability to meet standards for maintaining recreational use, a designated use by law. Therefore, any increase in the phosphorus content in a receiving water has the potential to cause or contribute to non-attainment of classification standards. Orthophosphate is the portion of total phosphorous that is readily available for uptake by aquatic plants. It is important to be able to characterize the facility effluent in terms of the relationship between orthophosphate and total phosphorus in order to better understand the effects on the receiving water. Maine law (38 MRSA § 464.4.A.4) states that *"...the Department may not issue a water discharge license for...the...discharge of pollutants to waters of the State that...cause those waters to be unsuitable for the designated uses and characteristics ascribed to their class"*. Phosphorus and orthophosphate concerns for the MDIFW Grand Lake Stream facility are two-fold in that the facility discharges its effluent to Grand Lake Stream (Class A) that serves as a tributary to Big Lake (Class GPA). Both types of waters are sensitive to these pollutants, but must be managed differently to avoid adverse effects. Further, pursuant to 38 M.R.S.A., § 465.2(C), discharges into Class A waters *"...licensed after January 1, 1986, are permitted only if...the discharged effluent will be equal to or better than the existing water quality in the receiving water. Discharges ...licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist"*. Additionally, 38 M.R.S.A., Section 464.4.A, states, *"...the department may not issue a water discharge license for..."* (2) a *"New direct discharge of domestic pollutants to tributaries of Class-GPA waters"*. Pursuant to this and the Department's upgrade "grandfathering" determination described in Fact Sheet Section 6, any new or increased discharges of pollutants beyond those and their levels included in the previous licensing action are considered as new discharges. Thus, effluent mass limits are being held to no more than prior licensed levels.

The previous licensing action contained a monthly average total phosphorus concentration limit of 0.052 mg/L, a monthly average mass limit of 0.57 kg/day (1.26 lbs/day), and a monthly average mass reporting requirement in pounds of phosphorus per 100 pounds of fish on hand for Outfalls #001A and #001B. It also contained a total annual phosphorus limit of 208.81 Kgs/year (460 lbs/year) and a reporting requirement of Kgs/month for Outfall #002A, and the monthly average mass limit of 0.57 kg/day for Outfall #003A. The required minimum detection level for phosphorus was 0.001 parts per million (ppm). Monitoring requirements consisted of a composite of a minimum of four grab samples collected at two hour increments during a facility working day at a frequency of once per month. In September 2001, the Department suspended monitoring requirements and effluent limits for Outfall #001A, as described in Fact Sheet Section 2c. The previous licensing action established an Effluent Limitation Compliance Schedule that required compliance with effluent limits within three years of the effective date of the WDL and delayed imposition of the limits until that time. The WDL compliance schedule was administratively modified also as described in Fact Sheet Section 2c. The phosphorus limits contained in the previous WDL originated from Department BPJ of water quality based limits necessary to protect the receiving water and its designated uses at the time of issuance.

Lake Concerns: Pursuant to information received from the Department's Division of Watershed Management (DWM), in implementation of the above standard (38 MRSA § 464.4.A.4), which is also applied to changes of land use in lake watersheds in Section 465-A, the Department has recognized (1) that most lakes can accept some small increment of increased phosphorus load before they will demonstrate a perceivable increase in trophic state, and (2) that this increment would more likely be the result of the cumulative loading from a number of sources and not be provided by one source. This is the basis for the phosphorus technical guide (Phosphorus Control in Lake Watersheds: A Technical Guide for Evaluating New Development, DEP, 1992), which is used under Department Regulation, Chapter 500, Stormwater Management, the Site Location of Development Law (38 MRSA, §§ 481-490), and many town land use ordinances to define a maximum allowable increase in phosphorus load to each lake which will not risk a perceivable increase in trophic state; and to distribute that increase among proposed and anticipated development activities in the lake's watershed.

The 1992 phosphorus technical guide defines the maximum increment of increased phosphorus content that will not risk a perceivable increase in lake trophic state. This "acceptable increase in phosphorus concentration" is a function of the lake's current water quality, its potential for developing a significant phosphorus recycling problem, and whether or not it supports, or has the potential to support, a coldwater fishery. Since the Department never recommends a "low level of protection", the acceptable increase in phosphorus concentration ranges from 0.5 parts per billion (ppb) or lower for some severely blooming lakes to 1.5 ppb. The 1992 guide provides the best available guidance on how much lake phosphorus concentrations could be increased without causing a perceivable increase in trophic state, and has been used to define this concept for Site Location Law projects in lake watersheds since 1987. In the technical guide, an empirical input-output originally proposed by Vollenweider (1976) and refined by Larsen and

Mercier (1976), is used to estimate the increase in load that would result in a given increase in phosphorus concentration.

The technical guide recognizes that development of lake watersheds and the resulting nonpoint sources of phosphorus will continue over time, and that it is the cumulative effect of this additional development which will cause increases in lake trophic state. It also recognizes that long term moratoria on development are not viable, so the available phosphorus load cannot be granted to new development on a first come, first serve basis. The guide addresses this issue by allocating the available phosphorus load over all anticipated development, thus requiring all regulated new development to share in the burden of phosphorus mitigation by implementing stormwater management best management practices (BMPs) and/or reducing density.

The technical guide for evaluating development related stormwater impacts on lakes provides a quantifiable means for defining the increase in phosphorus load which would result in an increase in trophic state. The Department has worked to determine how much of this available load should be allocated to a single point discharge of phosphorus. The technical guide allocates load based on the size of the parcel being developed, the logic being that the more of the watershed one owns, the more opportunity one should have to generate stormwater related phosphorus loading to the lake. This allocation method does not work for point sources, however, since they almost always have an extremely small parcel size relative to the phosphorus content proposed in the discharge. For example, areal phosphorus (P) allocations for development typically range from 0.02 lb P/acre/yr to 0.15 lb P/acre/yr. In a watershed with an allocation of 0.10 lb P/acre/yr, a point source that discharged 100 pounds P per year would have to own 1,000 acres of land if it was held to the same criteria as development sources. Obviously, if the Department is to make licensed point discharges to GPA tributaries a feasible option, it must apply a different means of allocating the available phosphorus load than the one used in the Stormwater and Site Laws.

The Department has determined that the portion of the available phosphorus load that can be applied to a licensed, point discharge should be lake and watershed specific and should consider the magnitude and likely rate of growth of other activities in the watershed. The Department must also ensure that the phosphorus allocated to the single, or few, point discharges to a lake's tributaries is small enough so that it leaves reasonable room for all other parties with development, forestry or agricultural interests within the lake's watershed. The starting point of the rationale should be the maximum allowable increase in phosphorus load which will not risk a perceivable increase in trophic state as defined by the methodology discussed above and presented in the phosphorus technical guide. Based on these considerations, the Department's DWM recommends that the percent of the available phosphorus load allocated to point sources be a function of the relative growth rate in the watershed of the receiving GPA waterbody as follows: High Growth Rate - 10%, Medium Growth Rate - 15%, and Low Growth Rate - 20%. In high growth areas more individuals are competing for the available phosphorus load, thus the areal allocation is low, usually 0.02 – 0.05 lb/acre/yr and the limitations placed on individual developments are more stringent than in low growth areas. So, it is appropriate that the

limitations on point sources in high growth watersheds be more stringent as well. In the case of hatcheries whose water source is from a stream or other water source draining to the lake where it can be assumed the background phosphorus in the withdrawn supply water would have reached the lake anyway, the allowable increase in annual phosphorus discharge loads may be added to estimates of background load to calculate the allowable total discharge load.

IF&W Hatchery, Grand Lake Stream, tributary to Big Lake

Big Lake is a large, mesotrophic, warm and cold water fishery lake with moderately high natural, dissolved color. As such it has a moderate/stable water quality category and receives a high level of protection. The acceptable increase in lake phosphorus concentration is 1.0 ppb (from Table 3-2 in the phosphorus technical guide), and the resulting allowable increase in phosphorus load to the lake is 1,043.8 kg/yr (2,301 lbs/yr). The watershed is located in a low growth area, so the portion of this load allocated to point sources is $0.20 \times 1043.8 \text{ kg/yr}$ or 208.8 kg/yr (460 lbs/yr). According to MEDEP's DWM, the hatchery is probably currently discharging much less than this amount so it should have no trouble meeting this limit.

The 460 lbs/year water quality based total phosphorus mass allocation entails MDIFW Grand Lake Stream's allowable total phosphorus discharge contribution to Big Lake per year. The Department recognizes that the water source, West Grand Lake, contains ambient levels of phosphorus that would naturally enter Big Lake (43.9 lbs/year, 19.9 kg/year). The Department calculated MDIFW Grand Lake Stream's total allowable phosphorus discharge, including background levels of phosphorus in the source waters, to be 504 lbs/yr (228.7 kg/yr). Permits issued by this Department impose the more stringent of the calculated water quality based or BPT based limits. Previously established limits or facility past demonstrated performance values are sometimes used as BPJ or BPT values when formal BPT based limits are absent. Past demonstrated performance is not being utilized in this analysis because, as outlined above, there are questions as to the accuracy of past data. The annual mass limit from this permitting action is equivalent to that of the previous WDL. The numbers are different because this permitting action accounts for ambient levels in the source water.

A daily maximum mass limit is not being established to provide MDIFW Grand Lake Stream with management flexibility to meet the yearly mass limits. However, this permitting action is requiring MDIFW Grand Lake Stream to report the mass of phosphorus discharged per month to provide for short term phosphorus management, as well as to identify either trends or effluent fluctuations related to seasonal and/or operational changes. The monitoring frequency of once per two weeks is designed to ensure that representative facility and effluent conditions are captured. As the revised mass limit is equivalent to the previously established limit, this permitting action does not establish a schedule of compliance for its implementation. The phosphorus mass limit is in effect as of the effective date of this permitting action and applies to the compilation of sampling data from all facility discharge points (filter, hatchery, and rearing facilities).

River Concerns: For river and stream wastewater discharges, the Department typically utilizes a 0.035-mg/L instream phosphorus concentration limit (ambient water quality threshold) and the dilution provided in a receiving water to calculate water quality based effluent limits, a revised method of analysis from that used and available at the time of issuance of the previous WDL. Based on Department research, the AWQC of 0.035 mg/L corresponds to the maximum level at which algae blooms will not typically occur in a receiving river or stream under normal circumstances. As phosphorus is typically of concern under chronic discharge conditions, the 7Q10 dilution of 3.9:1 described in Fact Sheet Section 6b, Dilution Factors, is being utilized in calculation of a water quality based effluent concentration limit of 0.14 mg/L. As this limit is less restrictive than the 0.052 mg/L limit established in the previous WDL, this permitting action is not establishing a schedule of compliance for its implementation. The revised phosphorus concentration limit is in effect as of the effective date of this permitting action. In free flowing rivers and streams, phosphorus and orthophosphate are typically summer time concerns for water quality. Therefore, this permitting action revises the previously established year round phosphorus concentration limits and monitoring requirements and establishes phosphorus concentration limits and phosphorous and orthophosphate monitoring requirements that are in effect from June 1 through September 30 each year. This permitting action establishes a once per two week monitoring requirement based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.

Both Grand Lake Stream and Big Lake will receive phosphorus discharged from the Grand Lake Stream facility. Both receiving waters are sensitive to the effects of this pollutant, therefore the discharge must be managed according to receiving water specific needs. This permitting action is establishing annual phosphorus mass limits based on water quality specific needs in Big Lake and seasonal phosphorus concentration limits based on water quality specific needs in Grand Lake Stream. Limits and monitoring requirements are expressed in gross end-of-pipe values.

It should be noted that as the concentration and mass limits are calculated based on different receiving waters, compliance with the established concentration limit will not necessarily result in compliance with the established mass limit. The permittee will need to actively manage its phosphorus discharge to achieve compliance and prevent adverse impacts in the receiving waters. Reported values shall be expressed in gross end-of-pipe values and phosphorous and orthophosphate analysis shall be conducted on the same sample collected. Laboratory analysis shall consist of a low-level phosphorus analysis with a minimum detection limit of 1 part per billion (1 ug/L), equivalent to the previous 0.001 mg/L detection limit. Based on the results of monitoring, the Department may reopen the permit in the future pursuant to Special Condition O to address facility specific effluent limitations, monitoring and operational requirements.

It must be noted that all new proposed discharges of pollutants or increases in pollutants in the existing discharge, excluding flow, are subject to the provisions for discharges to Class A waters contained in 38 M.R.S.A., § 465.2(C) and tributaries to GPA waters contained in 38 M.R.S.A., Section 464.4.A (2) and (3). Therefore, if MDIFW Grand Lake

Stream wishes to increase the number and mass of fish on station, it may need to provide additional wastewater treatment that will hold effluent quality constant.

- e. Fish on Hand: The reporting requirement for monthly average and daily maximum mass of fish on hand is being carried forward from the previous licensing action. 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. The previous licensing action required measurement of fish on hand in pounds at a frequency of once per month for Outfalls #001A, #001B, and #002A, as described above. In September 2001, the Department suspended monitoring requirements and effluent limits for Outfall #001A, as described in Fact Sheet Section 2c. This permitting action establishes once per two week monitoring on a year-round basis based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.
- f. Formalin: Fish hatcheries commonly use formalin based biocides for therapeutic treatment of fungal infections and external parasites of finfish and finfish eggs. Formalin products (Paracide-F, Formalin-F, or Parasite-S) contain approximately 37 percent by weight formaldehyde gas. USEPA Region 1 provided information related to formaldehyde concerns and limitations in hatchery permitting in Massachusetts specifying that formalin use should be consistent with U.S. Food and Drug Administration (FDA) labeling instructions (21CFR 1 § 529.1030).

However, toxicity data indicates that formalin is toxic to aquatic organisms at concentrations below FDA labeling guidelines. There are currently no ambient water quality criteria for formalin or formaldehyde established in Maine's Surface Water Toxics Control Program (Toxics Program, Chapter 584). Therefore, the Department is evaluating potential effects, effluent limitations, and monitoring requirements based on currently available information and best professional judgement.

EPA's hatchery permitting program in Massachusetts (EPA/MA) establishes acute and chronic water quality based effluent limits and requires Whole Effluent Toxicity testing in any calendar quarter in which formalin is used at a hatchery. EPA/MA's limits were developed based on work by Gerald Szal, Aquatic Ecologist, Massachusetts Department of Environmental Protection (October 24, 1990). Szal's methodology is based on review of a U.S. Fish and Wildlife document (Bills et al. 1977) which lists lethal concentrations (LC₅₀s) of formalin for a variety of fingerling fish. Two species of *Ictalurid* common to Massachusetts waters were selected as appropriate indicator species. Black bullhead had a 96-hour LC₅₀ of 62.1 ul/l (mg/L) and Channel Catfish had a 96-hour LC₅₀ of 65.8 ul/l (mg/L).

In addition to the Szal information, the Department reviewed studies provided by EPA's hatchery permitting program in New Hampshire (EPA/NH): Environmental Impact Assessment for the Use of Formalin in the Control of External Parasites on Fish, January 1995 (Dr. Stanley Katz, Rutgers University), a 1995 amendment for review of its use as a fungicide on eggs (Katz), and a 1981 Environmental Assessment titled Use of Formalin in

Fish Culture as a Parasiticide and Fungicide (John Matheson, USDA, Bureau of Veterinary Medicine). The most conservative results indicate an LC50 of 1.15 mg/L of formalin for ostracods from a study by Bells, Marking, and Chandler (1977) included in the 1995 and 1981 studies above.

The Department also reviewed the results of formalin toxicity testing on EPA's ECOTOX database. Published toxicity data contained LC50 values ranging by several orders of magnitude for the same species in the same studies.

Maine's toxics rules (Chapter 530.1.B) state, "*No person may discharge any toxic substance in any amount or concentration...that may cause or contribute to the failure of any classified body of surface water to attain its existing and designated uses or to meet narrative or numeric water quality criteria.*". Further, Chapter 530.3 states, "*the Department shall establish appropriate discharge prohibitions, effluent limits and monitoring requirements in waste discharge licenses...*" as needed to ensure compliance with water quality criteria, existing and designated uses. The Department found a large range of toxicity data for formalin with significant variation between studies. The Department typically uses the most conservative data in order to ensure protection of aquatic life in Maine, however the range of published toxicity data was so extensive and inconclusive that the Department determined that a more focused study specific to Maine waters was warranted. Using methods similar to those specified in Chapter 530 for establishing site specific criteria, the Department contracted with a commercial laboratory (Lotic Inc., Unity, Maine) in October 2003 to provide information on the acute toxicity of formalin to the water flea (*Ceriodaphnia dubia*), a species commonly used in freshwater toxicity testing. All testing was performed by a certified laboratory according to standard methods. According to Katz (1995), formalin undergoes oxidation to formic acid followed by metabolic oxidation by microorganisms to form carbon dioxide and water. The half-life of formalin in water is estimated at 36 hours. Considering the nature of formalin and its intermittent use, the Department determined that acute criteria would be most applicable for comparison.

As reported by the testing laboratory, Lotic Inc., dosing rates in the Department's testing "*were initially established for a range-finding evaluation bracketed by (formalin) concentrations between 4.05 and 500 mg/L using 5 dilutions (0.3 dilution factor)*". Pursuant to standard practices, the dosing ranges were modified downward "*in subsequent tests to more accurately bracket appropriate endpoint determinations (A-NOEC (acute no-effect concentration), LC50)*". A total of four series of tests were conducted with the final two test series (tests) consisting of duplicate "definitive" tests utilizing a 0.5 dilution factor. Lotic reported that trend analyses revealed clear concentration-response relationships for the final three tests. Based on Lotic's experience, differences in survival for the two definitive tests "*are within the realm of normal variability for the testing of dilute organic pollutants*". "*For the two definitive tests, the A-NOECs (IC10s) ranged between 0.62 and 2.5 mg/L; LC50s ranged between 5.13 and 20 mg/L*". "*The A-NOEC for formalin (Parasite S) for C. dubia could be as low as 0.62 mg/L*". However, based on the limited number of tests performed and "*given the test variability in the data for the two definitive tests*", Lotic recommended that "*it would be prudent to average the A-NOEC*

values from these two evaluations (1.56 mg/L)". "This value will still be well below the most conservative LC50 value reported (5.13 mg/L)". USEPA'S National Exposure Research Laboratory reviewed the testing results and found the variances observed to be appropriate. Further, USEPA found utilization of the 1.56 mg/L value as the A-NOEC to be a reasonable approach supported by test results in formulating an agency best professional judgement determination. Therefore, based on the Department's best professional judgement, this A-NOEC is being utilized as the acute criteria for establishing a facility effluent limit. The Department notes that a permittee is free to undertake site specific and water specific toxicity analyses to provide additional information on the toxicity of formalin.

Multiplying the acute criteria by the low flow dilution factor of 1.6:1 described in Fact Sheet Section 6b, Dilution Factors, yields the following acute water quality based effluent limit:

$$1.56 \text{ mg/L (acute criteria)} \times 1.6 \text{ (dilution)} = 2.5 \text{ mg/L acute formalin limit}$$

Comparatively, the previous licensing action established a requirement stating, "*at no time shall the discharge of Formaldehyde exceed 5 milligrams per liter*". This limit was based on the Department's best professional judgement at the time. As formaldehyde constitutes 37% of formalin, the 5 mg/L limit would equate to a 13.5 mg/L formalin limit. Parts per million (ppm) and mg/L are equivalent measurements.

Actual effluent levels of formalin can be calculated based on the use and dilution available at the facility. MDIFW Grand Lake Stream uses approximately 55 gallons of formalin per year primarily for treatment of fungal infections on eggs, but may also use it on fish kept at the facility.

For treatments on eggs, MDIFW Grand Lake Stream administers a concentration of 1,667 ppm (1:600) of formalin for 15-minutes in flow-through water every other day between November and January. Approximately 0.172-gallons (650 ml) of undiluted formalin are administered directly to each line of hatchery raceways/troughs to achieve the desired dose. As described in Fact Sheet Section 2c, MDIFW Grand Lake Stream's hatchery facility has 14 lines of raceways, however during the time of year when formalin is applied, it uses a maximum of 6 lines of raceways. Although only a portion of the raceways are used, MDIFW Grand Lake Stream maintains the full 90 gpm flow through the hatchery facility and outfall. The 90 gpm rate times the 15-minute treatment period yields 1,350 gallons of hatchery facility wastewater available for dilution of the 1.03 gallons of formalin administered (0.172 gal x 6 raceways). The flow through water is then discharged to the receiving water. The end of pipe concentration from egg treatments can be calculated as follows:

$$\begin{aligned} 1,350 \text{ gal hatchery wastewater} / 1.03 \text{ gal formalin} &= 1,311:1 \text{ dilution} \\ 1,000,000 \text{ ppm (undiluted) formalin} / 1,311 &= 763 \text{ ppm formalin discharged} \end{aligned}$$

For treatments on fish, MDIFW Grand Lake Stream administers formalin as needed to achieve a dose of approximately 250 ppm (1:4,000) in the rearing structures. Approximately 6-gallons of undiluted formalin is administered at a time. Formalin is administered at the head of the affected raceway pools by drip and allowed to flow through the entire line over a one hour period. The flow through water is then discharged to the receiving water. The facility's monthly average discharge flow of 2.9 MGD equates to 120,833-gallons in the one hour treatment / flow exchange period. This figure minus the 5,400 gallons of hatchery flow (90 gpm x 60 minutes) during the same period yields 115,433-gallons available for dilution. The end of pipe concentration from fish treatment can be calculated as follows:

$$\begin{aligned} 115,433\text{-gal rearing facility wastewater} / 6 \text{ gal formalin} &= 19,239:1 \text{ dilution} \\ 1,000,000 \text{ ppm (undiluted) formalin} / 19,239 &= 52 \text{ ppm formalin discharged} \end{aligned}$$

Permits issued by this department impose the more stringent of the calculated water quality based or best practicable treatment (BPT) based limits. Although no formal BPT based limit has been developed for formalin, the Department considers a facility's discharge under best management practices to correspond to a BPJ of BPT. The calculated water quality based effluent limit of 2.5 mg/L is significantly more stringent than the potential effluent formalin concentration from both the egg and fish treatments and is therefore being established in this permitting action, pursuant to the Department's upgrade "grandfathering" determination described in Fact Sheet Section 6. As the calculated acute limit of 2.5 mg/L represents a new more stringent water quality based limit, the Department is establishing a schedule of compliance (Permit Special Condition G) pursuant to State Law, 38 M.R.S.A., Section 414-A.2 to address the investigation and implementation of operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit and to accommodate toxicity studies proposed by the permittee. From the effective date of the permit until June 30, 2009, a formalin effluent limit of 13.5 mg/L, based on the formaldehyde limit contained in the previous licensing action, shall be in effect. Beginning July 1, 2009, the 2.5 mg/L formalin limit shall be in effect. The Department has not determined an appropriate chronic limit for formalin use at this time.

This permitting action also establishes effluent mass limits pursuant to Department Rules, Chapter 523.6(f). The daily maximum mass limit is calculated based on the permittee's projected maximum amount of formalin used per day (6 gallons) times the weight of formalin (9.13 lbs/gal), resulting in a value of 54.8 lbs/day. This method was used to provide for flexibility in management of necessary treatments and to ensure that formalin is not discharged in toxic amounts. Throughout the term of the permit, the permittee shall report the monthly average effluent formalin mass and concentration. Effluent values shall be determined through calculations, as described in Special Condition A, Footnote 5 and Fact Sheet Section 17.

This permitting action is establishing effluent limitations and monitoring requirements for formalin, as this is the commonly used form, and not for formaldehyde. The Department is requiring MDIFW Grand Lake Stream to report therapeutic agents used at the facility that have the potential to be discharged to the receiving water.

- g. Dissolved Oxygen (effluent): Because of the low dilution of facility effluent provided in the receiving water and to determine effluent effects on the receiving water, this permitting action establishes seasonal monthly average and daily maximum concentration monitoring requirements for effluent dissolved oxygen (D.O.). Further, based on Department modeling and to ensure compliance with Class B D.O. standards, this permitting action establishes a seasonal daily minimum effluent D.O. limit of 7.5 mg/L and once per week monitoring requirements from June 1 through September 30 each year. In addition to requirements established in Permit Special Condition A to report daily minimum, daily maximum, and monthly average concentration results, the permittee shall submit all data from effluent dissolved oxygen monitoring to the Department in a supplemental report accompanying the appropriate monthly discharge monitoring report pursuant to Permit Special Conditions A (footnote 5) and E.
- h. Total Residual Chlorine: Limits on total residual chlorine (TRC) are typically specified in Department permits to ensure that ambient water quality standards are maintained and that BPT technology is being applied to abate the discharge of chlorine. Permits issued by this Department impose the more stringent of the calculated water quality based or BPT based limits.

The permittee has stated that calcium hypochlorite (CaCl_2O_2) is used periodically during spring turnover in West Grand Lake and sporadically through the year as needed, to clean the facility's 10-micron influent drumfilter. The permittee states that the filter is placed on bypass mode and drained of water, except for a minimal amount of water allowed to remain in the 10-foot x 9-foot x 6-inch (337-gallon capacity) filter reservoir to aid in filter cleaning. Six pounds of CaCl_2O_2 is mixed in 10-gallons of water and poured over the moving drum filter. The filter is allowed to rotate in the cleaning mixture for 30-minutes. Then, an approximately equal amount of sodium thiosulfate ($\text{Na}_2\text{O}_3\text{S}_2$) is added to the filter reservoir to de-chlorinate the cleaning water before discharge to the receiving water.

The previous licensing action specified that *"at no time shall the concentration of chlorine in the receiving water exceed 11 parts per billion (ppb) for chronic and/or 19 ppb for acute"*, but established no monitoring or reporting requirements. Representative of the sporadic nature of disinfection activities at MDIFW Grand Lake Stream and using the acute dilution factor described above, the Department calculated an end-of-pipe water quality based threshold for TRC as follows:

Acute (a) Criterion	Dilution Factor	Calculated Acute Limit
0.019 mg/L	1.6:1 (a)	0.03 mg/L

The Department has established a daily maximum BPT limitation of 1.0 mg/L for facilities that disinfect their wastewater with elemental chlorine or chlorine based compounds or use them in their processes. The calculated water quality based TRC limit of 0.03 mg/L is more stringent than the BPT limitation of 1.0 mg/L and is therefore being established as a TRC limit. As this limit is equivalent to the guidance in the previous licensing action cited above, this permitting action is not establishing a schedule of compliance for its implementation. The TRC effluent limit and monitoring requirements are in effect as of the effective date of this permitting action. This permit contains a footnote that states that compliance will be based on the minimum level (ML) of detection of 0.05 mg/L. The minimum monitoring frequency of once per discharge day is based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.

- i. pH: The previous licensing action contained the requirement, *"the pH shall not be less than 6.0 or greater than 8.5 at any time unless as naturally occurs in the receiving water"* for Outfalls #001A and #001B, but contained no monitoring requirements. This permitting action is carrying forward the pH range limitation of 6.0-8.5 standard units consistent with the pH limit established in discharge licenses for other fish hatcheries, which is considered by the Department as a best practicable treatment standard. This permitting action establishes once per two week effluent pH monitoring on a year-round basis based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.
- j. Duration of Discharge: The previous licensing action required the licensee to report the numbers of hours per month that raceways were cleaned (Outfall #001B) as well as the numbers of hours per month that filter backwash was discharged (Outfall #004A). This permitting action eliminates these requirements, establishing instead a requirement to provide minimum treatment technology, development of operation and maintenance plans, and revised technology based and water quality based effluent limits and monitoring requirements.
- k. Receiving Water Study: The previous licensing action required the licensee to monitor dissolved oxygen, BOD, TSS, and total phosphorus in Grand Lake Stream at locations upstream and downstream of the outfall. Monitoring was required to be conducted in the mornings and afternoons between July 1 and September 30, 2000, and was designated as Outfalls #011A, #012A, #011P, and #012P. The intent of this requirement was to *"better quantify the characteristics of the hatchery effluent, the effectiveness of the various stages of treatment, and to determine effects on water quality..."*. In this permitting action, the Department is utilizing other methods of assessing effluent effects on the receiving water and attainment of water classification standards through ambient macroinvertebrate biomonitoring and effluent monitoring, and is therefore not carrying forward this requirement.

7. ANTI-BACKSLIDING

Federal regulation 40 CFR, §122(l) and Department rules Chapter 523.5(1) contain the criteria for what is often referred to as the anti-backsliding provisions of the Federal Water Pollution Control Act (Clean Water Act). In general, the regulation states that except for provisions specified therein, effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit. Allowable exceptions to the anti-backsliding provisions, which include when:

- (1) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation and
- (2) information is available which was not available at the time of the permit issuance (other than revised regulations, guidance or test methods) and which would justify the application of less stringent effluent limitations at the time of permit issuance.

This permitting action revises previously established effluent limitations and monitoring requirements for several pollutants including BOD, TSS, and total phosphorus, and changes the discharge flow limit, which may appear less stringent. The rationale for these actions is contained in Fact Sheet Section 6, *Effluent Limitations & Monitoring Requirements*. The Department believes that these actions are consistent with the anti-backsliding provisions.

8. ANTI-DEGRADATION

Maine's anti-degradation policy is included in 38 M.R.S.A., Section 464(4)(F) and addressed in the *Conclusions* section of this permit. Pursuant to the policy, where a new or increased discharge is proposed, the Department shall determine whether the discharge will result in a significant lowering of existing water quality. Increased discharge means a discharge that would add one or more new pollutants to an existing effluent, increase existing levels of pollutants in an effluent, or cause an effluent to exceed one or more of its current licensed discharge flow or effluent limits, after the application of applicable best practicable treatment technology. As revisions to previous effluent limitations for some pollutants may appear less stringent, the Department is addressing the implications under the anti-degradation policy.

This permitting action revises previously established effluent limitations and monitoring requirements for several pollutants including BOD, TSS, and total phosphorus, and changes the discharge flow limit. The rationale for these actions is contained in Fact Sheet Section 6, *Effluent Limitations & Monitoring Requirements*. Based on the information provided in the referenced section, the Department does not consider these actions to result in increased discharges of pollutants and therefore does not consider the anti-degradation policy to be of issue.

9. ALTERNATIVE DISCHARGE STUDY

Maine Law, 38 M.R.S.A., § 465.2(C), states that discharges into Class A waters “...*licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist*”. Further, “...*the department shall require the applicant to objectively demonstrate to the department’s satisfaction that the discharge is necessary and that there are no other reasonable alternatives available.*” Grand Lake Stream was upgraded from Class B to Class A in 1985. The Grand Lake Stream facility’s wastewater discharge is subject to “grandfathering” to the extent outlined in Fact Sheet Section 6. However, the Grand Lake Stream facility is still subject to the above cited requirements. The previous licensing action required the licensee to submit a study of alternatives to the discharge of hatchery wastewater to Cold Stream (Practical Alternatives Study) within six months following the effective date of the WDL. As was understood by all parties involved, this condition was intended to apply to Grand Lake Stream. As indicated in Fact Sheet Section 2c, in February 2002 on behalf of MDIFW, Fishpro Inc. submitted an Alternative Discharge Study report for all nine MDIFW hatcheries and rearing stations. The study determined that none of the alternatives evaluated were viable options for the MDIFW facilities.

Alternative Discharge Studies (ADS) typically evaluate the technical feasibility, estimated costs, and potential environmental impact from alternatives that will result in elimination of a discharge to a receiving water. Such alternatives include, but are not limited to, piping the discharge to a less restrictive receiving water, connecting the discharge to a municipal wastewater treatment facility, and constructing storage capacity and land applying effluent. The study shall include a material and cost breakdown of each identified option, additional equipment necessary, any needed real estate purchases or easements, and other issues and expenses. If no practical alternative for elimination of the discharge exists, then the ADS shall also evaluate modifications to existing wastewater treatment infrastructure and practices that will result in improvement of the effluent quality, such as additional or alternative treatment technology or methods, operational changes, seasonal modifications, discharge reduction, etc.

As described in Permit Special Condition H, on or before six months prior to expiration of this permit, MDIFW Grand Lake Stream is required to submit to the Department an ADS report for the Grand Lake Stream facility to determine if practical alternatives to the discharge exist. The ADS report shall evaluate wastewater treatment infrastructure, technologies, practices or other modifications that will result in the elimination of the discharge to the receiving water or improvement in the effluent quality.

10. SETTLING BASIN CLEANING:

Discharge of inadequately treated fish hatchery wastewater (excess feed and fish waste) contributes solids, BOD, and nutrients to receiving waters, which can contribute to eutrophication and oxygen depletion. This, in combination with other pollutant specific toxic effects, impacts the aquatic life and habitat value in the receiving water. Typical hatchery wastewater treatment practices include effluent filtration and settling with solids removal.

The previous licensing action for most fish hatcheries / rearing stations required the licensee to clean its settling basins when accumulated materials occupy 20% of the basin capacity, or prior to this point if the facility is violating its TSS limits. In this permitting action, the Department is requiring that any settling structures be cleaned when accumulated materials occupy 20% of a basin's capacity, when material deposition in any area of the basins exceeds 50% of the operational depth, or at any time that said materials in or from the basins are contributing to a violation of permit effluent limits. Most previous actions also required the licensee to measure sludge deposits a minimum of once per year during October at four representative locations in each settling structure. In this permitting action, measurement of waste deposition left to the discretion and responsibility of MDIFW Grand Lake Stream.

11. DISEASE AND PATHOGEN CONTROL AND REPORTING:

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 shall 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."* The previous licensing action required the licensee to notify the MEDEP the next business day of any diseases in the fish of regulatory concern. In this permitting action, as a salmonid aquaculture facility, MDIFW Grand Lake Stream must comply with MDIFW and MeDMR salmonid 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 the event of a catastrophic pathogen occurrence, the permittee shall submit to the Department for review, information on the proposed treatment including materials/chemicals to be used, material/chemical toxicity to aquatic life, the mass and concentrations of materials/chemicals as administered, and the concentrations to be expected in the effluent. The Department will address such occurrences through administrative modifications of the permit.

12. THERAPEUTIC AGENTS:

In the June 30, 2004 final NEG, 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.

The previous licensing action required that all medicated fish feeds, drugs, and other fish health therapeutants shall be approved by the US Food and Drug Administration (USFDA) and applied according to USFDA acceptable guidelines. Further, records of all such materials used were to be maintained at the facility for five years. The Department is carrying forward these requirements in this permitting action with modifications that therapeutants be applied according to USFDA accepted guidelines and manufacturer's label instructions and that therapeutic agents must also be registered with USEPA, as appropriate.

This permitting action does not authorize routine off-label or extra-label drug use. Such uses shall only be permitted in emergency situations when they are the only feasible treatments available and only under the authority of a veterinarian. The permittee shall notify the Department in writing within 24-hours of such use. This notification must be provided by the veterinarian involved and must include the agent(s) used, the concentration and mass applied, 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, the likely need of repeat treatments, and information on aquatic toxicity. 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 such use.

This permitting action does not authorize the discharge of drugs authorized by the USFDA pursuant to the Investigational New Animal Drug (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. Review and approval of INAD related uses and discharges will be addressed through administrative modifications of the permit.

Formaldehyde: The previous licensing action established a requirement stating, "*at no time shall the discharge of Formaldehyde exceed 5 milligrams per liter*". The discharge of formaldehyde is addressed in Fact Sheet Section 6f, EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS, Formalin, above. The Department is requiring MDIFW Grand Lake Stream to continue to report therapeutic agents used at the facility that have the potential to be discharged to the receiving water.

Sodium Chloride: MDIFW Grand Lake Stream uses sodium chloride (NaCl, salt) for treatment of fungal infections or external parasites on fish as needed. If necessary, MDIFW Grand Lake Stream uses a maximum of 50 pounds of salt per day on an intermittent basis

between June 1 and September 30 for this purpose. The salt would be diluted in the full facility waste-stream (2.9 MGD) prior to discharge to the receiving water. The concentration in the effluent can be calculated as follows:

50-lbs NaCl divided by 2.9 million gals divided by 8.34 lbs/gal = 2.1 ppm salt.

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 MEDEP 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. In that the effluent NaCl concentrations are anticipated to fall significantly below the 1,000 ppm level of concern, the Department is not establishing specific limitations or monitoring requirements for NaCl in this permitting action. Instead, use of NaCl shall be consistent with the use and record keeping requirements for therapeutic agents specified above.

Other Materials: MDIFW Grand Lake Stream reports using no other therapeutic or medicinal agents.

13. DISINFECTING/SANITIZING AGENTS:

The previous licensing action required the licensee to submit a list of all sanitizing agents and/or disinfectants used on rearing equipment, their concentrations as used and concentrations and masses at the point of discharge. Further, the previous licensing action required that at no time shall the concentration of chlorine in the receiving water exceed 11 parts per billion (ppb) for chronic and/or 19 ppb for acute toxicity concerns. Also, all footbath wastes were required to be disposed of by approved methods and not into the hatchery waste stream or receiving waters.

MDIFW Grand Lake Stream reports that it uses calcium hypochlorite to clean the facility's influent drumfilter and sodium thiosulfate to detoxify the cleaning wastewater prior to discharge on a periodic basis. These practices and applicable effluent limitations and monitoring frequencies are described in Fact Sheet Section 6h, Total Residual Chlorine. MDIFW Grand Lake Stream reports that it uses approximately 4-gallons of a hard surface disinfectant ("T.B.Q.") per year for equipment and utensil disinfection, but that no disinfectants enter the waste-stream or receiving water. MDIFW Grand Lake Stream further reports that it uses approximately 2-gallons of an iodine based product per year for egg disinfection during fall egg take, but that none enters the waste-stream or receiving water.

This permitting action requires MDIFW Grand Lake Stream to maintain records of all sanitizing agents and/or disinfectants 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, 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 minimus in this permitting action or in subsequent Department actions. The discharges of any other agents or waste products not specifically included in this permitting action are considered unauthorized discharges pursuant to Permit Special Condition C.

14. 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. Based on the information provided and Department BPJ, the Department is specifying that minimum treatment technology for the Grand Lake Stream facility shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, removal of solids. MDIFW Grand Lake Stream shall provide treatment equal to or better than the BPJ minimum treatment technology and shall 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.

It is the Department's intent to evaluate effluent data and potentially revise technology based effluent limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology. The Department reserves the right to reopen facility discharge permits to establish these limits.

15. AMBIENT MACROINVERTEBRATE BIOMONITORING:

The previous licensing action required the licensee to conduct macroinvertebrate biomonitoring in the receiving water at a point downstream of the facility discharge after complete mixing during the summer of either 2000 or 2001. Biomonitoring was conducted by MEDEP DEA in 2001 and revealed, as outlined in Fact Sheet Section 5, that the macroinvertebrate communities were found to be only indicative of Class B waters due to natural effects from West Grand Lake located upstream.

Based on available data, the Department is concerned with the effects of fish hatchery effluent discharges on rivers and streams in Maine. As macroinvertebrate communities provide indications of the overall ecological health of a receiving water, the Department has determined that biomonitoring is needed to better evaluate attainment of river and stream water classification standards and designated uses, resource impacts, and corrective measures when necessary. In order to address this need, the Department's Division of Environmental Assessment (MEDEP DEA) will conduct macroinvertebrate biomonitoring in the receiving water once during the term of this permitting action to determine attainment of the aquatic life standards. In the event that MEDEP DEA's biomonitoring indicates non-attainment of aquatic life standards in the receiving water, MDIFW Grand Lake Stream shall be required to conduct ambient macroinvertebrate biomonitoring annually thereafter. Prior to any such

monitoring, MDIFW Grand Lake Stream shall be required to submit a biomonitoring plan for Grand Lake Stream to MEDEP DEA for review and approval, pursuant to Permit Special Condition O. The plan shall be consistent with "*Methods for Biological Sampling and Analysis of Maine's Rivers and Streams*" (DEP #LW0387-B2002, August 2002) and shall include a scope of work and schedule, monitoring locations and maps, methods and materials, and reporting procedures for the biomonitoring program. Biomonitoring shall be conducted according to a Department approved monitoring plan. Results shall be reported to the Department in a biomonitoring report by December 15 each year. If the receiving water is subsequently determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, the Department will reopen the permit pursuant to Permit Special Condition O, to modify or discontinue the biomonitoring requirement.

16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION:

The US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) formally listed the Atlantic salmon as an endangered species on November 17, 2000. 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...*" Gulf of Maine Distinct Population Segment of Atlantic salmon (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.*"

Leading up to the listing and in subsequent draft MEPDES Permit / Maine WDL reviews, the USFWS and NOAA Fisheries 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. These issues are of particular concern for the Gulf of Maine DPS.

MDIFW Grand Lake Stream is a state landlocked Atlantic salmon and brook trout hatchery and rearing facility that produces fish for stocking in Maine waters as part of MDIFW's responsibilities in managing fisheries. MDIFW Grand Lake Stream does not raise Atlantic salmon as envisioned in the USEPA opinion above and thus is not subject to genetic testing requirements. MDIFW Grand Lake Stream discharges its effluent to Grand Lake Stream, which in turn flows to Big Lake, and eventually the St. Croix River. None of these waters are designated DPS waters.

As MDIFW Grand Lake Stream does not discharge effluent to a Gulf of Maine DPS river segment, a CMS plan is not required for the protection of endangered Atlantic salmon. However, NOAA Fisheries generally comments that from an ecosystem perspective, fish containment would certainly help protect native fauna in receiving waters. In consideration of this information and as infrastructure in place at the Grand Lake Stream facility provide a level of fish containment management, neither genetic testing nor a CMS is being required in this permitting action.

17. SAMPLE CALCULATIONS FOR EFFLUENT FORMALIN

To calculate the effluent formalin concentration, the permittee shall utilize the concentration administered, the volume of water to which the formalin is added, and dilutions provided from administration to end-of-pipe. Parts per million (ppm) and milligrams per liter (mg/L) are equivalent measurements. The Department's method of calculating effluent formalin levels at the MDIFW Grand Lake Stream facility are contained in Fact Sheet Section 6.f. The following are examples of alternate methods to calculate effluent formalin levels.

For egg treatments, this example involves administration of 1,720 ppm of formalin for 15 minutes in flow-through water. It assumes a rate of water through the egg trays of 150 gallons per minute times the 15-minute treatment period yielding 2,250 gallons of initial wastewater. The total facility wastewater flow during the same 15-minute period can be calculated by taking a current discharge flow of 8,300 gpm times 15 minutes yielding 124,500 gallons. The formalin would receive an initial dilution of $124,500 \text{ gal.} / 2,250 \text{ gal} = 55.3:1$. The 124,500 gallons of wastewater flows to the facility settling ponds, which have a total capacity of 969,000 gallons. The formalin would receive a second dilution of $969,000 \text{ gal} / 124,500 \text{ gal} = 7.8:1$. The end of pipe concentration can be calculated as follows:

$$1,720 \text{ ppm formalin} / 55.3 / 7.8 = 4 \text{ ppm formalin discharged}$$

For external parasite treatments on fish, the example facility administers formalin at a dose of 225 ppm. In this example, two 7,700 gallon pools are treated simultaneously (15,400 gal). The volumes of the two pools are gradually exchanged with fresh water and discharged into the 8,300 gpm facility waste stream over 112 minutes providing an initial dilution. The facility wastewater flows to the settling ponds, which provide a small second dilution. The effluent concentration can be calculated as follows:

$$\begin{aligned} 8,300 \text{ gpm} \times 112 \text{ minutes} &= 929,600 \text{ gal facility wastewater during pool discharge} \\ 929,600 \text{ gal facility wastewater} / 15,400 \text{ gal pool volume} &= 60.3:1 \text{ initial dilution} \\ 969,000 \text{ gal settling pond} / 929,600 \text{ gal facility wastewater} &= 1.04:1 \text{ second dilution} \\ 225 \text{ ppm formalin} / 60.3 / 1.04 &= 3.6 \text{ ppm formalin discharged} \end{aligned}$$

For broodstock external parasite treatments, the example facility administers formalin to new broodstock fish at a dose of 25 ppm in flow-through water. This example assumes a flow through rate of 80 gpm times a treatment period of 6-hours (360 minutes) per day yielding 28,800 gallons of initial wastewater. The wastewater then flows to the 969,000 gallon capacity settling ponds. The effluent concentration can be calculated as follows:

$$\begin{aligned} 969,000 \text{ gal settling pond} / 28,800 \text{ gal. waste stream} &= 33.6:1 \text{ dilution} \\ 25 \text{ ppm formalin} / 33.6 &= 0.74 \text{ ppm formalin discharged} \end{aligned}$$

The effluent mass shall be calculated by multiplying the actual gallons of formalin used at the facility in a 24-hour period by a 9.13 lbs/gallon conversion factor based on the specific gravity of formalin. The conversion factor is derived by multiplying the weight of water (8.34 lbs/gal) times the specific gravity of formalin as compared to water (1.095). If a facility administers 1.04 gallons of formalin in a day, the formalin mass can be calculated as follows:

$$1.04 \text{ gal formalin} \times 9.13 \text{ lbs/gallon} = 9.5 \text{ lbs formalin discharged}$$

In these examples, the various types of formalin treatments are not administered or discharged at the same time. If multiple discharges of formalin were to occur simultaneously, the facility would have to consider the cumulative formalin concentration and mass. These examples illustrate end-of-pipe (EOP) concentrations, which would be further diluted depending upon the facility's effluent dilution in the receiving water. If a facility receives a 3:1 effluent dilution in the receiving water, the calculated EOP concentration should be divided by three to provide the concentration in the receiving water after mixing.

18. DISCHARGE IMPACT ON RECEIVING WATER QUALITY:

As permitted, 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 Grand Lake Stream to meet standards for Class A classification or Big Lake to meet the standards for its GPA classification. In response to concerns with effects of fish hatchery effluent discharges on rivers and streams in Maine and limited available data, as outlined in Permit Special

Condition N and Fact Sheet Section 15, MDIFW Grand Lake Stream is required to conduct ambient macroinvertebrate biomonitoring during the term of this permit. Data collected will be used to evaluate attainment of water classification standards and designated uses, resource impacts, and corrective measures when necessary.

If monitoring conducted pursuant to this permitting action and/or other monitoring efforts indicate that non-attainment conditions persist in the receiving water(s) and that MDIFW Grand Lake Stream causes or contributes to those conditions, this permitting action may be reopened pursuant to Permit Special Condition O and effluent limitations, monitoring and operational requirements, and/or wastewater treatment requirements adjusted accordingly.

19. PUBLIC COMMENTS:

Public notice of this application was made in the Calais Advertiser newspaper on or about June 27, 2005. 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 shall 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.

20. DEPARTMENT CONTACTS:

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

Robert D. Stratton
Division of Water Quality Management
Bureau of Land and Water Quality
Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017

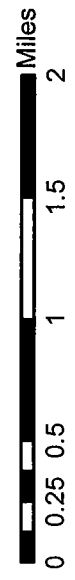
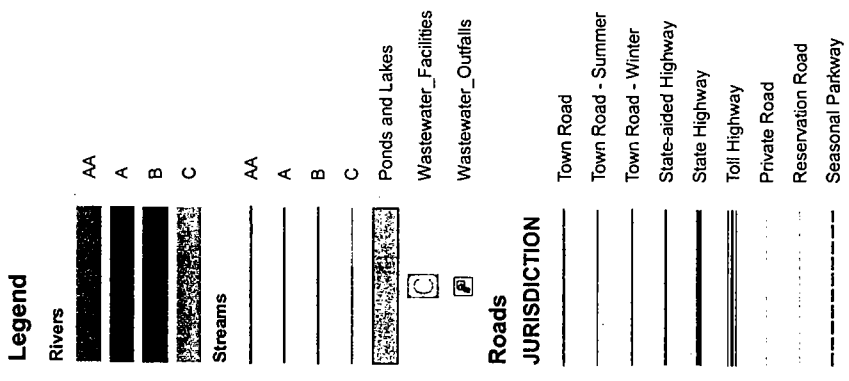
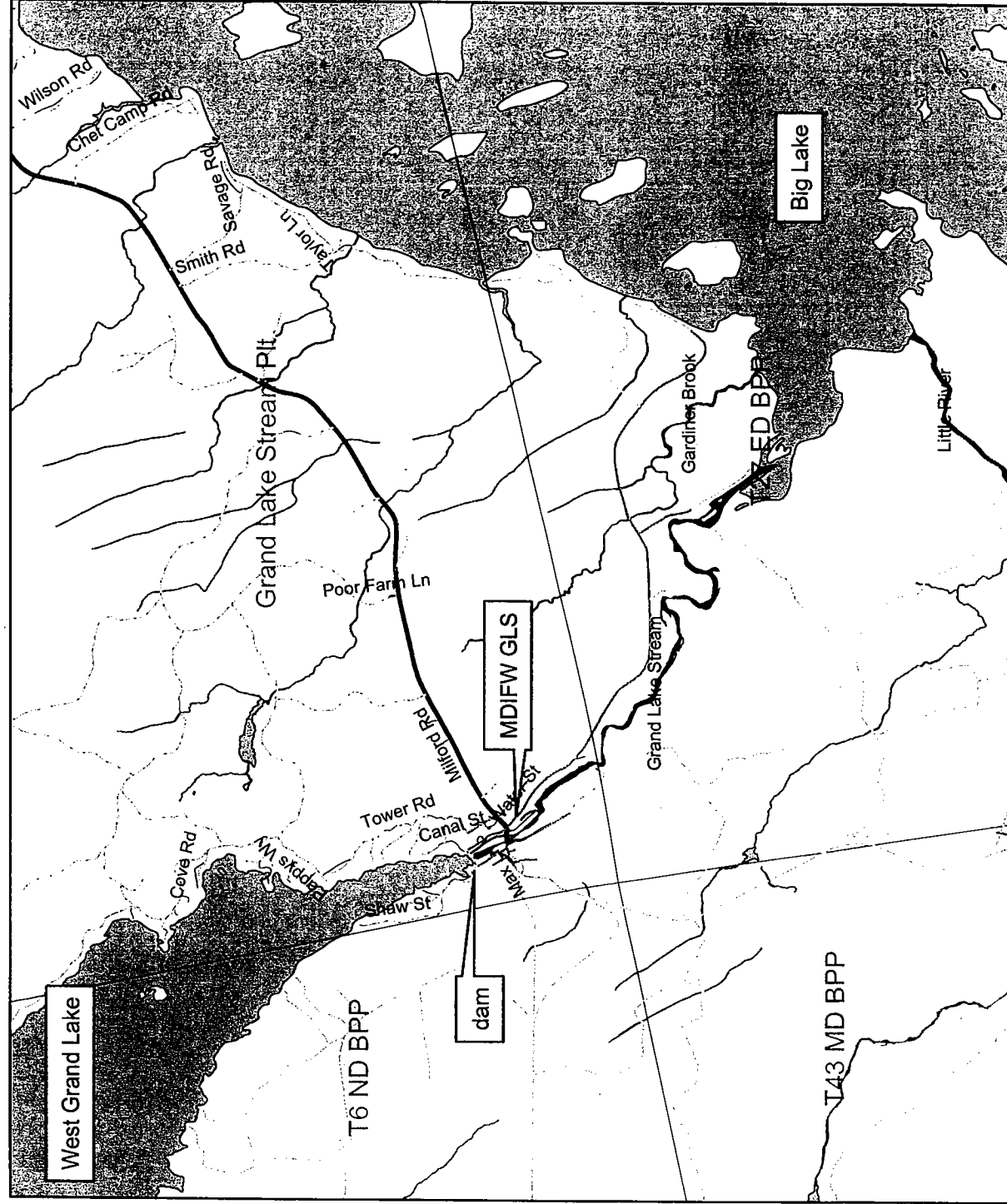
Telephone: (207) 287-6114
Fax: (207) 287-7826
email: Robert.D.Stratton@maine.gov

21. RESPONSE TO COMMENTS:

During the period of June 29, 2006 through July 28, 2006, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued to the MDIFW Grand Lake Steam State Fish Hatchery for the proposed discharge. The Department did not receive any comments that resulted in significant revisions to the permit. Therefore, no response to comments has been prepared.

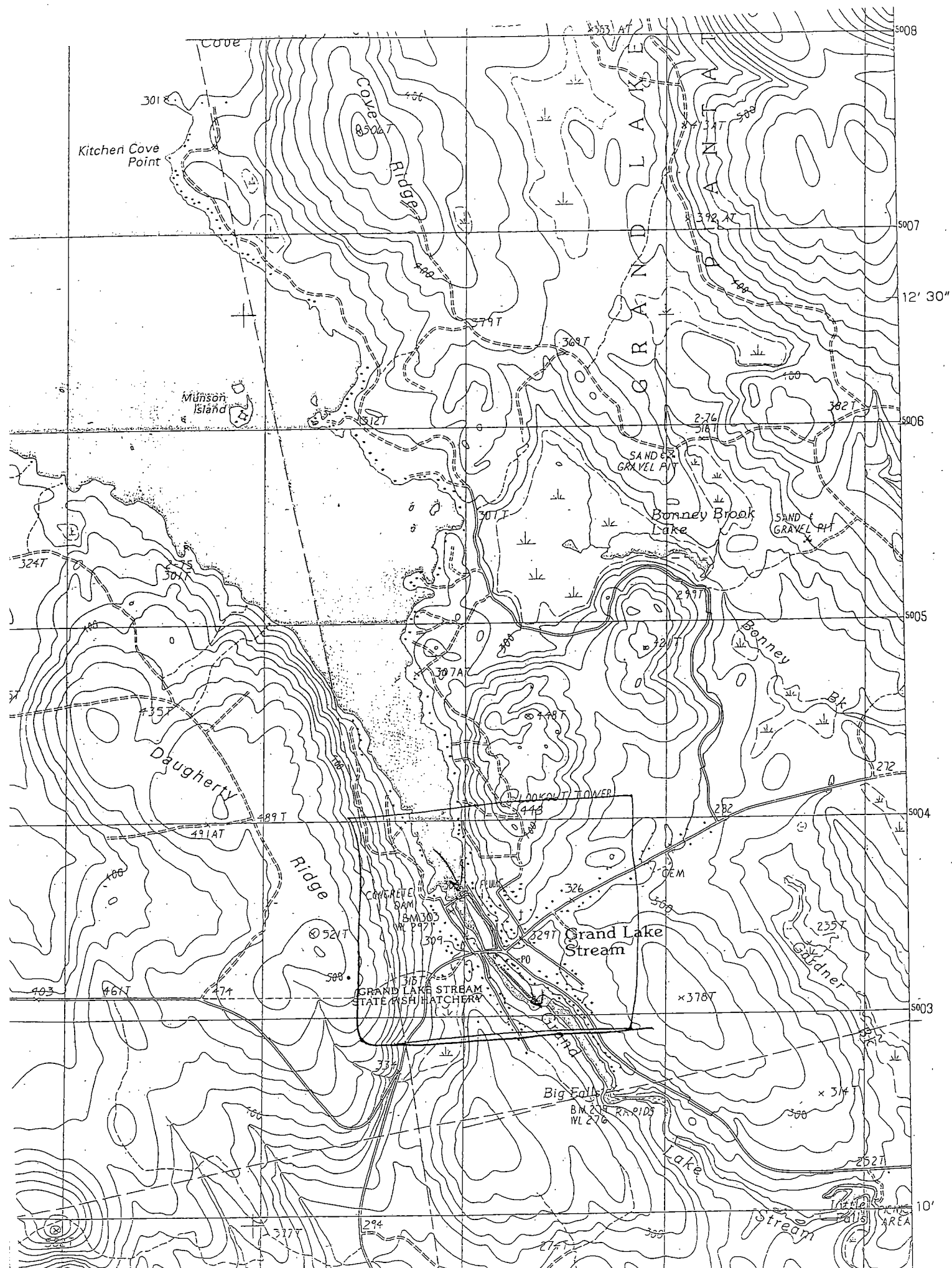
ATTACHMENT A

(Facility Location Maps)



Map created by:
 Bob Stratton
 Division of Water Resource Regulation
 Maine Department of Environmental Protection

MDIFW Grand Lake Stream Grand Lake Stream, Maine



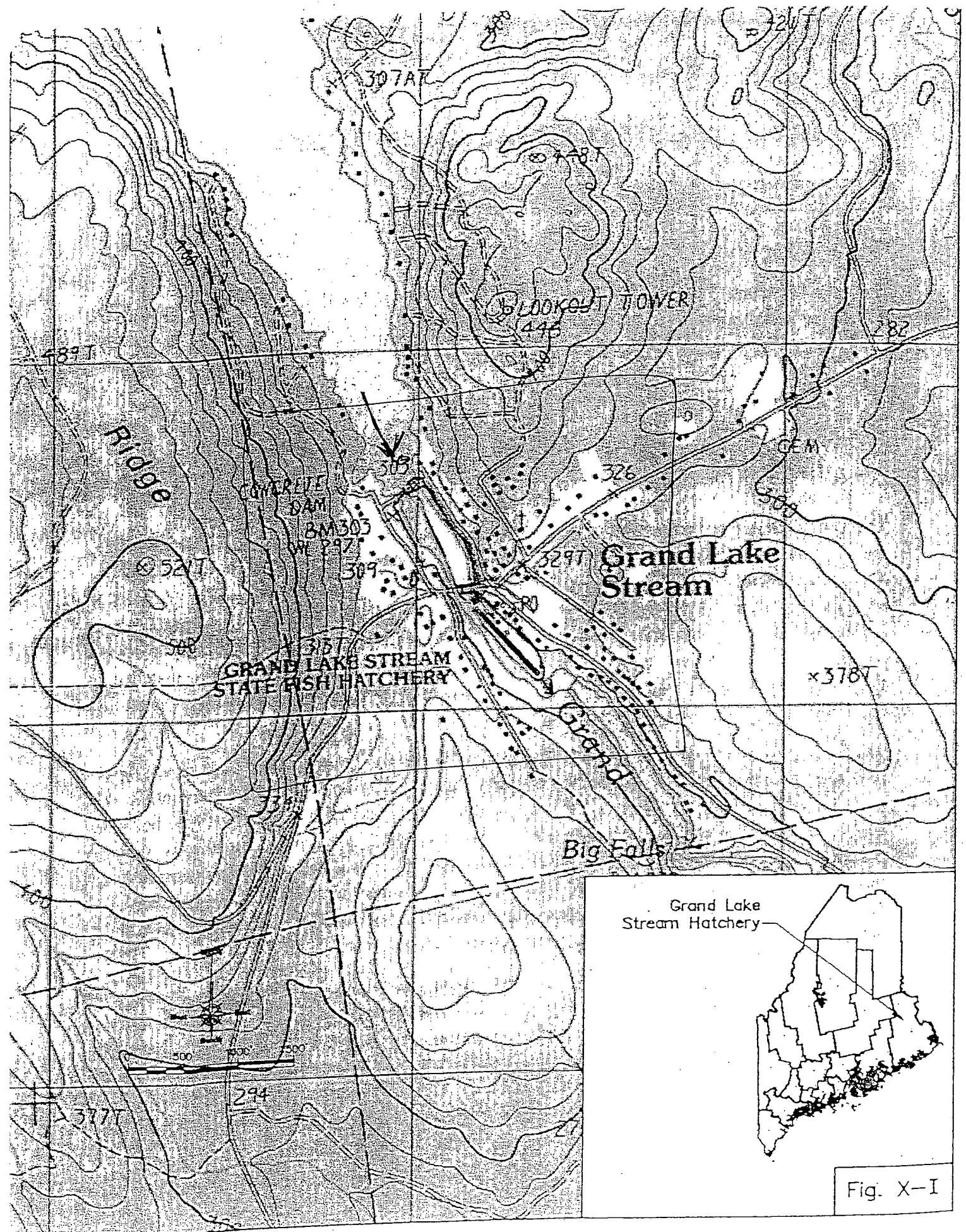
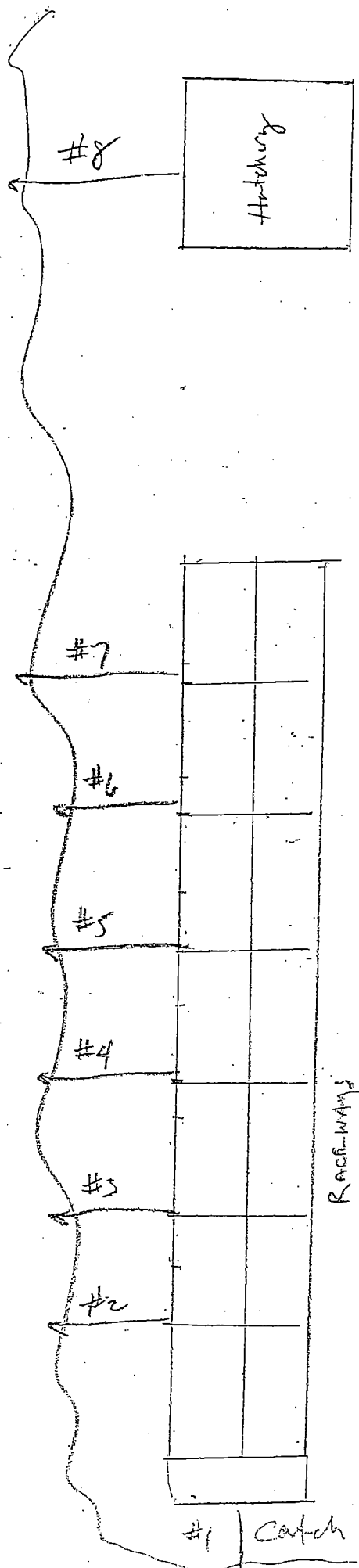
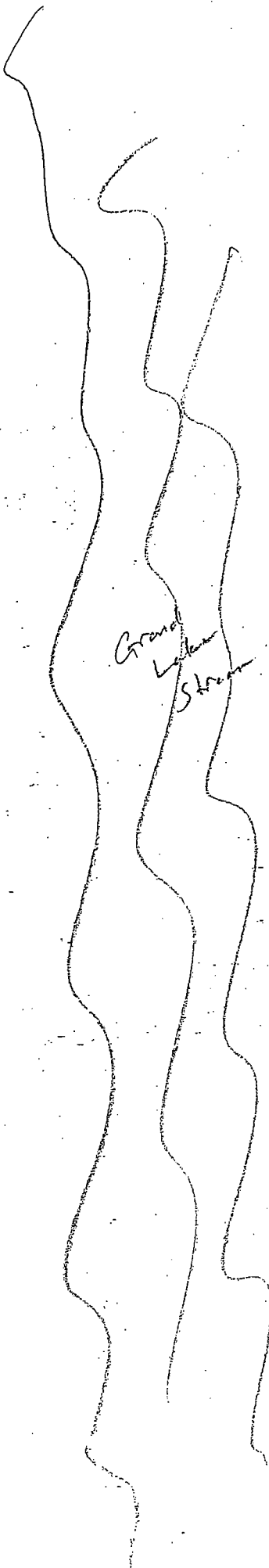


Fig. X-I

ATTACHMENT B
(Facility Site Plans)

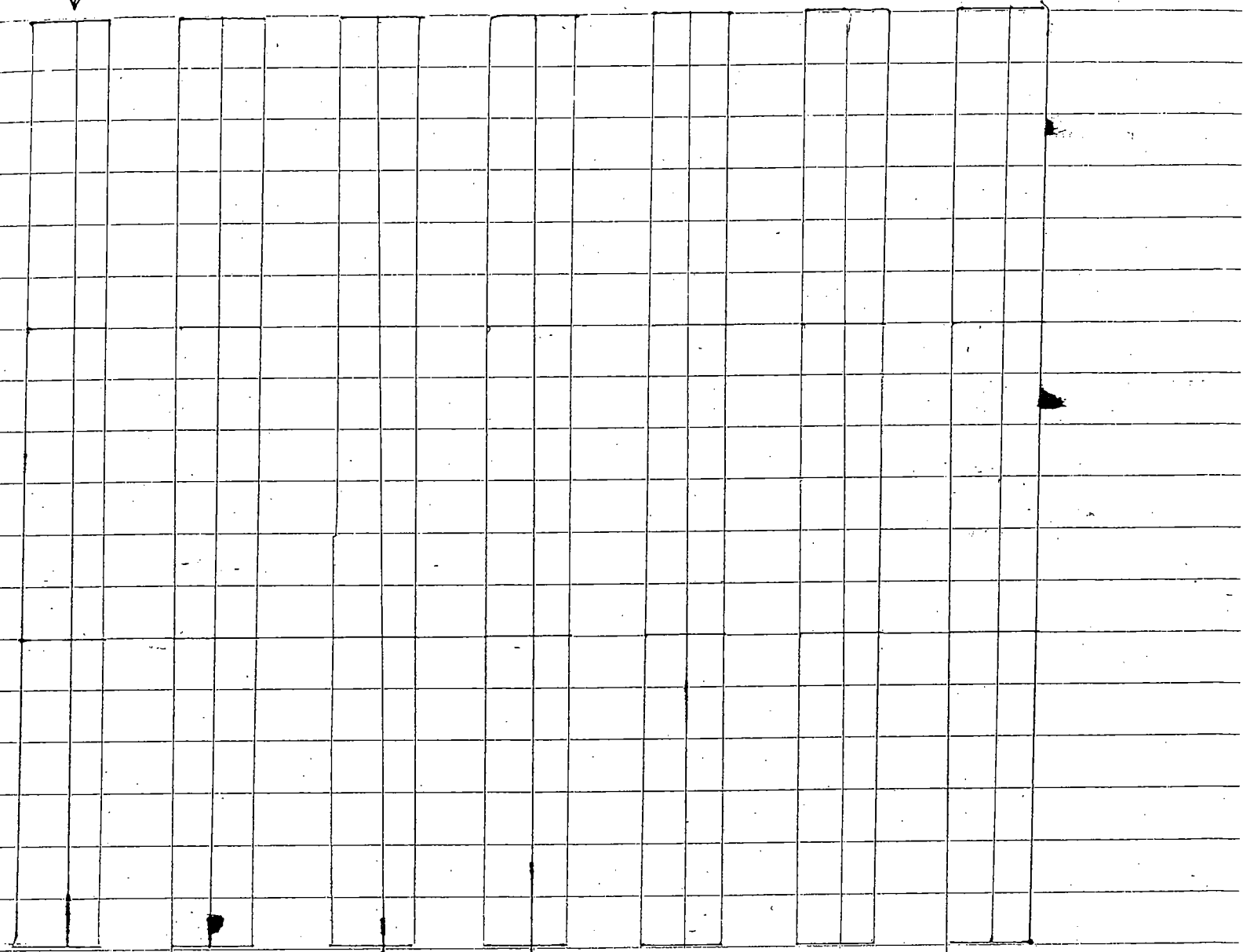


Grand Lake Stream
SFH

RACEWAYS

#1 Catch Basin

flow



HATCH HOUSE REARING UNITS

14" x 8" EACH

ATTACHMENT C
(Engineer's Facilities Planning Report)

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land and Water Quality
Division of Water Quality Management

INVESTIGATION PROTOCOL

All reports, plans and specifications shall be submitted by the dates specified in the permit. The documents submitted for formal approval shall include the engineer's report, final plans and specifications.

Procurement of Engineering Services.

This step requires retaining an engineering firm to plan, study, and design the project. The owner then hires one or more separate construction contractors to build the project; construction services, including construction management, are performed by the design firm. Start-up and operator instruction services are performed by the design engineer.

Engineer's Facilities Planning Report (Reports Required Pursuant to Permit Special Condition G).

The purpose of the report is to present in clear, concise form a description of the problem, alternative solutions examined, rejected and recommended, their technical and financial feasibility, and their environmental impact. The report should contain a detailed basis of design covering each component of the treatment process. The engineer's report should provide a description of alternative wastewater treatment processes screened for consideration, as well as factors considered in selecting processes. Such factors should include:

- Compatibility with existing facilities
- Flexibility for expansion
- Ability to meet required permit limits
- Suitability to handle probable variations in plant loading
- Proven effectiveness
- Land area requirements
- Labor requirements
- Construction costs
- Operational costs
- Energy requirements
- Odor potential

System Alternatives: The engineer must carefully consider all feasible designs for the facility. The initial evaluation should focus on the technical appropriateness of all alternatives. Then, those deemed technically appropriate should receive in-depth technical and economic evaluation. The alternatives that should be evaluated include: source reduction through pollution prevention, storage and release to the receiving water as appropriate to reduce toxic amounts, conveyance of the waste to the POTW, pretreatment, conventional treatment and innovative/alternative treatment.

Conclusions, Recommendations, and Proposed Schedules: The engineer's facility planning report should clearly summarize the detailed evaluations contained in the body of the report. Provide a clear description of what is being proposed and propose an implementation schedule for approval. A typical schedule should reflect various future phases of the project such as required approvals, final design, bidding, contract award, construction and start-up. The facility shall be fully operational within the timeframes established in the permit.

Final Design Contract Drawings and Specifications

Plans should consist of general views, specific plan areas, elevations, sections, and details. Together with the specifications, these provide information for the contract and construction of the project. Complete technical specifications for the work should accompany the plans. Technical specifications should be clear and concise. They should include, but are not limited to, all construction information that the builder needs that is not shown on the plans, such as details of the design requirements, including the quality of materials, lists of required manuals, tools, chemicals, spare parts, and calibration equipment.