STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

May 5, 2006

Mr. Steve Tremblay
Wade State Fish Hatchery
70 Fish Hatchery Road
Casco, Maine 04915

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0001066
Maine Waste Discharge License (WDL) Application # W-002038-5Q-B-R
Final Permit/License

Dear Mr. Tremblay:

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: Steve Wilson, John Boland, Russ Danner, Peter Bourque (MDIFW),
Fred Gallant (MEDEP); ~~Dave Webster~~ 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

web site: www.maine.gov/dep

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
WADE STATE FISH HATCHERY	)	ELIMINATION SYSTEM PERMIT
CASCO, CUMBERLAND COUNTY, ME.	)	AND
FISH HATCHERY	)	
#ME0001066	)	WASTE DISCHARGE LICENSE
#W-002038-5Q-B-R **APPROVAL**	)	**RENEWAL**

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 WADE STATE (CASCO) FISH HATCHERY (hereinafter MDIFW Casco), 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-002038-5Q-A-R, which was issued on July 21, 2000, for a five-year term. The WDL approved the discharge of a maximum of 2.9 million gallons per day (MGD) of fish hatchery wastewater to Mile Stream, Class B from a state fish hatchery and rearing facility in Casco, Maine.

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. In those areas, the Department maintains the authority to issue WDLs pursuant to Maine law. 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 #ME0001066 will be utilized as the primary reference number for the Casco 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 2.9 MGD daily maximum discharge flow limit and establishing monthly average flow limits of 2.9 MGD for rearing and 0.052 MGD for hatchery wastewater discharges;
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 year-round annual total phosphorus mass limits based on the assimilative capacity of Sebago Lake and monthly phosphorus mass reporting requirements;
5. establishing seasonal total phosphorus monthly average concentration limits based on the assimilative capacity of Mile Stream and daily maximum phosphorus concentration reporting requirements;
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 minimum monitoring frequency and sample type requirements based on BPJ;
12. restricting approved outfalls to #005A for rearing facility wastewater discharges and #006A for hatchery facility wastewater discharges;
13. eliminating the reporting requirement for duration of discharge while cleaning;
14. requiring a current facility Operation and Maintenance Plan;
15. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
16. establishing requirements for settling basin / show pool cleaning;
17. requiring compliance with existing state salmonid fish health rules;
18. establishing requirements related to proper use and record keeping of therapeutic agents;
19. eliminating effluent limits for chlorine and establishing record keeping requirements for disinfecting/sanitizing agents;
20. establishing BPJ derived minimum treatment technology requirements for the Casco facility;
21. establishing requirements for annual ambient macroinvertebrate biomonitoring beginning in 2007;
22. replacing previous receiving water study requirements with requirements for ambient dissolved oxygen and temperature monitoring studies.

CONCLUSIONS

BASED on the findings in the attached Proposed Draft Fact Sheet dated March 30, 2006 and revised May 1, 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 reasonable alternatives available.

ACTION

THEREFORE, the Department APPROVES the above noted application of the MDIFW WADE STATE (CASCO) FISH HATCHERY AND REARING STATION to discharge fish hatchery wastewater consisting of a monthly average flow of 2.9 MGD of rearing facility wastewater and 0.052 MGD of hatchery facility wastewater to Mile Stream, Class B, 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.

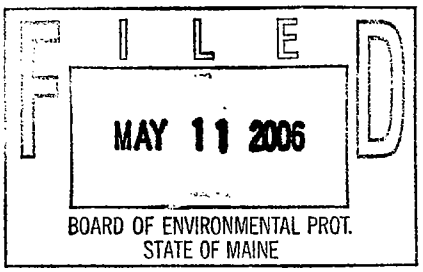
DONE AND DATED AT AUGUSTA, MAINE, THIS 8TH DAY OF May, 2006.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
David P. Littell, Commissioner

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

SPECIAL CONDITIONS
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. The permittee is authorized to discharge **fish hatchery wastewater from Outfall #005A (rearing station)** to Mile Stream. Such discharges shall be limited and monitored by the permittee as specified below[1]:

Monitoring Parameter	Discharge Limitations and Reporting Requirements				Minimum Monitoring Requirements		
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	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]*	47.1 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]*	47.1 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 274.5 lbs/year *[50]*	0.035 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]*
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]*
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 8 and 9.

SPECIAL CONDITIONS
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. The permittee is authorized to discharge **fish hatchery wastewater from Outfall #006A (hatchery building)** to Mile Stream. Such discharges shall be limited and monitored by the permittee as specified below[1]:

Monitoring Parameter	Discharge Limitations and Reporting Requirements				Minimum Monitoring Requirements		
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	Daily Minimum as specified	Measurement Frequency as specified	Sample Type as specified
Flow *[50050]*	0.052 MGD *[03]*	---	---	---	---	Daily *[01/01]*	Measured *[MS]*
BOD[2] *[00310]*	0.9 lbs/day *[26]*	4.3 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	---	Once/2 weeks *[01/14]*	Composite[3] *[CP]*
TSS[2] *[00530]*	0.9 lbs/day *[26]*	4.3 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 5.5 lbs/year *[50]*	0.035 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 May 31, 2009** *[51064]*	report lbs/day *[26]*	7.3 lbs/day *[26]*	report mg/L *[19]*	13.5 mg/L *[19]*	---	Once/2 weeks *[01/14]*	Calculated *[CA]*
Formalin[5] **Beginning June 1, 2009** *[51064]*	report lbs/day *[26]*	7.3 lbs/day *[26]*	report mg/L *[19]*	1.6 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]*
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 DMRs. Footnotes are found on Pages 8 and 9.

SPECIAL CONDITIONS
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. The permittee is required to conduct **Ambient Water Quality Monitoring** in Mile Stream as specified below **from June 1 through September 30 each year**, designated as **Outfall #006B** for the purpose of Permit Compliance System tracking.

Monitoring Parameter	**Discharge Limitations and Reporting Requirements**					**Minimum Monitoring Requirements**	
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	Daily Minimum as specified	Measurement Frequency as specified	Sample Type as specified
Dissolved Oxygen[6] **Ambient Location 1:** Between Pleasant Lake dam and head of MDIFW Casco facility. *[00300]*	---	---	Report mg/L *[19]*	Report mg/L *[19]*	Report mg/L *[19]*	1/week *[01/07]*	Measured *[MS]*
Water Temperature[6] Ambient Location 1 *[00010]*	---	---	Report Degrees Celsius *[04]*	Report Degrees Celsius *[04]*	Report Degrees Celsius *[04]*	1/week *[01/07]*	Measured *[MS]*
Time of Day[6,7] Ambient Location 1 *[80273]*	---	---	---	Report 24-hour time *[1Q]*	---	1/week *[01/07]*	Record *[RC]*
Dissolved Oxygen[6] **Ambient Location 2:** Below MDIFW Casco outfalls. *[00300]*	---	---	Report mg/L *[19]*	Report mg/L *[19]*	Report mg/L *[19]*	1/week *[01/07]*	Measured *[MS]*
Water Temperature[6] Ambient Location 2 *[00010]*	---	---	Report Degrees Celsius *[04]*	Report Degrees Celsius *[04]*	Report Degrees Celsius *[04]*	1/week *[01/07]*	Measured *[MS]*
Time of Day[6,7] Ambient Location 2 *[80273]*	---	---	---	Report 24-hour time *[1Q]*	---	1/week *[01/07]*	Record *[RC]*

The italicized numeric values bracketed in the table above and in subsequent text are code numbers that Department personnel utilize to code the monthly DMRs. Footnotes are found on Pages 8 and 9.

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 sampling at Outfalls #005A, MDIFW Casco's rearing facility discharge, and #006A, MDIFW Casco's hatchery facility discharge, following all means of wastewater treatment, as shown on Fact Sheet Attachment B. 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/pool 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). See Attachment A of this Permit for sample protocols.

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, ambient dissolved oxygen, water temperature, and time of day monitoring to the Department in a supplemental report accompanying the appropriate monthly discharge monitoring report pursuant to Permit Special Conditions E and O.

7. Time of Day: Time of day of ambient dissolved oxygen and temperature monitoring shall be reported using 24-hour time as HH hours, MM minutes, such as 05 hours 10 minutes.

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 only from Outfalls #005A, MDIFW Casco's rearing facility discharge, and #006A, MDIFW Casco's hatchery facility discharge, as shown on Fact Sheet Attachment B. 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.

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.

SPECIAL CONDITIONS
D. NOTIFICATION REQUIREMENT (cont'd):

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 (13^{th}) 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 (15^{th}) 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, N, and O, shall be submitted to the Department's assigned compliance inspector (unless otherwise specified) at the following address:

Department of Environmental Protection
Bureau of Land and Water Quality
Division of Water Quality Management
312 Canco Road
Portland, Maine 04103

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

On or before July 1, 2006, 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.

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.

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

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 ensure compliance. The permittee has recently completed major renovations to MDIFW Casco 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 system 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) **on or before June 1, 2009**.

2. **Formalin:**

A. **On or before June 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 January 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]*

SPECIAL CONDITIONS
G. SCHEDULE OF COMPLIANCE (cont'd)

C. **On or before June 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 April 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 June 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 Casco is required to submit to the Department for review, an Alternative Discharge Study (ADS) report for the Casco 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 / SHOW POOL 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).

J. DISEASE AND PATHOGEN CONTROL AND REPORTING:

MDIFW Casco 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.

SPECIAL CONDITIONS

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 deminimus in this permitting action or in subsequent Department actions.

M. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT:

Based on information provided and Department BPJ, the permittee shall provide minimum treatment technology for the Casco 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 Casco 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.

SPECIAL CONDITIONS

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 and specifically in Mile Stream. 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 in 2006 to determine attainment of the aquatic life standards following upgrade of the MDIFW Casco facility. This permitting action requires MDIFW Casco to conduct ambient macroinvertebrate biomonitoring **annually beginning calendar year 2007. On or before March 1, 2007**, MDIFW Casco shall submit a biomonitoring plan for Mile Stream to MEDEP DEA for review and approval ***[34099].*** 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** ***[90199, 90299, 90399, 90499].***

If the receiving water is determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, including following the 2006 monitoring, the Department will reopen the permit pursuant to Permit Special Condition P, to modify or discontinue the biomonitoring requirement.

O. AMBIENT DISSOLVED OXYGEN AND TEMPERATURE MONITORING:

Based on the low effluent dilution provided in the receiving water and the need for additional data on the effects of MDIFW Casco's effluent on the water quality of its receiving water, this permitting action requires the permittee to seasonally monitor ambient dissolved oxygen and temperature levels in Mile Stream. The permittee shall monitor ambient dissolved oxygen and temperature (Celsius) from June 1 through September 30 each year beginning the effective date of this permit at a frequency of once per week and shall report the time of day the monitoring is conducted. The permittee shall report all monitoring results to the Department in a supplemental report accompanying the appropriate monthly discharge monitoring report ***[21899].*** Monitoring shall be conducted within two hours of sunrise, or as indicated in a Department approved monitoring plan, at two locations: (1) between the Pleasant Lake dam and the head of the MDIFW Casco facility in an area representing free-flowing conditions and (2) below the MDIFW Casco outfalls in an area representing the dissolved oxygen sag point, unless revised by the Department. The permittee shall also report on the composition of river flow between the dam and the head of the facility. The permittee shall specify if river flow results from flow over the dam and provide the estimated depth of that overflow, or only leakage through the dam and provide the length of time that condition persists in days. **On or before one month following the effective date of this permit**, MDIFW Casco shall submit a plan for ambient dissolved oxygen and temperature

SPECIAL CONDITIONS
O. AMBIENT DISSOLVED OXYGEN AND TEMPERATURE MONITORING (cont'd)

monitoring and instrument calibration/data quality control to the Department's Division of Environmental Assessment for review and approval ***[00201].*** The plan shall include a scope of work and schedule, monitoring locations and maps, sampling methods and materials, and reporting procedures for the ambient dissolved oxygen and temperature monitoring program. The plan shall also include procedures for regular instrument calibration to ensure data quality control. Ambient dissolved oxygen and temperature monitoring shall be conducted according to a Department approved monitoring plan.

P. 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.

Q. SEVERABILITY

In the event that any provision, or part thereof, of this permit is declared to be unlawful by a reviewing court, the remainder of the permit 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

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. 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

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.

April 2004

Protocol for Orthophosphate Sample Collection and Analysis

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. 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 separate 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: Same as described in Total P Protocol.

April 2004

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
AND
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: March 30, 2006
Revised: May 1, 2006

MEPDES PERMIT NUMBER: # ME0001066
WASTE DISCHARGE LICENSE: # W-002038-5Q-B-R

NAME AND ADDRESS OF APPLICANT:

WADE STATE FISH HATCHERY
Maine Dept. of Inland Fisheries and Wildlife
284 State Street, 41 State House Station
Augusta, Maine 04333

COUNTY: CUMBERLAND

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

WADE STATE FISH HATCHERY
70 Fish Hatchery Road
Casco, Maine 04915

RECEIVING WATER / CLASSIFICATION: Mile Brook, Class B; Crooked River, Class AA; Sebago Lake, Class GPA

COGNIZANT OFFICIAL AND TELEPHONE NUMBER:

Mr. Steve Tremblay Facility Manager (207) 627-4358
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-002038-5Q-A-R, which was issued on July 21, 2000, for a five-year term. The WDL approved the discharge of a maximum of 2.9 million gallons per day (MGD) of fish hatchery wastewater to Mile Stream, Class B from a state fish hatchery and rearing facility in Casco, Maine.

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. In those areas, the Department maintains the authority to issue WDLs pursuant to Maine law. 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 #ME0001066 will be utilized as the primary reference number for the Casco 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 2.9 MGD daily maximum discharge flow limit and establishing monthly average flow limits of 2.9 MGD for rearing and 0.052 MGD for hatchery wastewater discharges;
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 year-round annual total phosphorus mass limits based on the assimilative capacity of Sebago Lake and monthly phosphorus mass reporting requirements;
5. establishing seasonal total phosphorus monthly average concentration limits based on the assimilative capacity of Mile Stream and daily maximum phosphorus concentration reporting requirements;
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 minimum monitoring frequency and sample type requirements based on BPJ;
12. restricting approved outfalls to #005A for rearing facility wastewater discharges and #006A for hatchery facility wastewater discharges;
13. eliminating the reporting requirement for duration of discharge while cleaning;
14. requiring a current facility Operation and Maintenance Plan;
15. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
16. establishing requirements for settling basin / show pool cleaning;
17. requiring compliance with existing state salmonid fish health rules;
18. establishing requirements related to proper use and record keeping of therapeutic agents;
19. eliminating effluent limits for chlorine and establishing record keeping requirements for disinfecting/sanitizing agents;
20. establishing BPJ derived minimum treatment technology requirements for the Casco facility;
21. establishing requirements for annual ambient macroinvertebrate biomonitoring beginning in 2007;
22. replacing previous receiving water study requirements with requirements for ambient dissolved oxygen and temperature monitoring studies.

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

February 12, 1975 – The Maine Department of Environmental Protection issued WDL #662 to the Maine Department of Inland Fisheries and Game for the discharge of a daily average of 4.16 MGD and a daily maximum of 5.18 MGD of fish hatchery wastewater from the Casco facility to Mile Stream, Class B-1. The WDL was valid until February 12, 1978.

February 20, 1975 – The USEPA issued NPDES Permit #ME0001066 to the Maine Department of Inland Fisheries and Game for the discharge of an unspecified volume of wastewater from the Casco facility to Mile Stream. The Permit was valid through February 15, 1980.

September 28, 1977 – The Maine Board of Environmental Protection ordered WDL #662 amended to eliminate or significantly reduce monitoring requirements for all parameters based on effluent monitoring data conducted since issuance of the WDL.

March 8, 1978 – The Maine Department of Environmental Protection issued WDL # 2038 to MDIFW for the discharge of a daily maximum of 5.75 MGD of treated fish hatchery wastewater from MDIFW Casco to Mile Stream, Class B-1. The WDL was issued for a five-year term.

May 11, 1983 – The Maine Board of Environmental Protection issued WDL #2038 for the discharge of a daily maximum of 5.75 MGD of treated fish hatchery wastewater from the MDIFW Casco hatchery to Mile Stream, Class B-1. The WDL was issued for a five-year term.

July 21, 2000 – The Department issued # W-002038-5Q-A-R to MDIFW Casco for the discharge of a daily maximum of 2.9 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-002038-5Q-A-R for Outfall #001A, designated for effluent discharges from the show pools when not cleaning the show pools. The Department required monitoring for Outfall #001B, designated for effluent discharges from the show pools when cleaning raceways that discharge through the show pools, to be conducted by autocompositer and required monitoring for Outfall #002A, designated for effluent discharges from raceways being cleaned that discharge directly to the receiving water and not through the show pools, to be conducted by hand or by autocompositer.. The Department made no mention of Outfall #003A, designated for a summary of the phosphorus mass discharged from Outfalls #001A or #001B and #002A. The Department also made no mention of Outfall #004A, designated for a summary of the flow, mass of fish on hand, and total phosphorus mass values from Outfalls #001A, #001B, and #002A. MDIFW continued to monitor all outfalls.

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-002038-5Q-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 Casco facility. The application was assigned WDL # W-002038-5Q-B-R and MEPDES permit #ME0001066.

d. Source Description/ Facility Operation:

The MDIFW Casco facility, or Wade State Fish Hatchery, was constructed in 1955 as a state aquaculture facility. MDIFW Casco is a fish hatchery and rearing station, raising landlocked Atlantic salmon, brook trout, brown trout, and rainbow trout obtained from this and other MDIFW hatchery facilities to appropriate sizes for stocking in Maine waters as part of MDIFW's responsibilities in managing fisheries in Maine. In October-November of each year, MDIFW Casco obtains Sebago Lake strain landlocked salmon through capture, egg taking, and fertilization from wild broodstock at the Panther Pond dam on Sebago Lake in Raymond, Maine. In November of each year, MDIFW Casco obtains salmon eggs from 3-year old broodstock maintained on site, as described below. Salmon egg hatching, early rearing, and growout occurs at MDIFW Casco. In November-December of each year, MDIFW Casco obtains 4 to 6-inch long brook trout fall fingerlings from the MDIFW Dry Mills (Gray) hatchery for rearing at Casco. In May-June of each year, MDIFW Casco obtains 1.5 to 2-inch long brown trout and rainbow trout fry from the MDIFW New Gloucester hatchery for rearing at Casco. The MDIFW Casco facility underwent significant upgrades in 2005. The narratives below indicate both historical and upgraded conditions.

Influent Water: Source water for the MDIFW Casco facility is obtained from Pleasant Lake (1,077-acres) through one 16-inch diameter iron intake pipe. The intake is fitted with a "T" that allows the use of either deep water (35-feet) or shallow water (12-feet) supplies, depending on fish growth temperature requirements. The intake depth to be used must be physically changed by a MDIFW SCUBA diver. The intake is fitted with a coarse (4-inch) screen on the lake end of the pipe to prevent fish or large debris from entering the station. The intake water is passed through one of two ultraviolet disinfection units consisting of 64 bulbs per unit for bacterial disinfection. Following UV disinfection and prior to contact with fish on station, excess influent water can be discharged directly to Mile Stream through a 12-inch diameter over flow pipe. Influent water is piped to the head of both of two sets of raceways. Historically, water was also piped part way down each of the raceway lines (following raceway series B noted below) to provide additional fresh water. A separate 8-inch diameter intake line provides influent water from the UV building to the facility hatchery building. The hatchery building incorporates nylon stockings on each tank inlet for filtration and exclusion of freshwater organisms. MDIFW Casco is a flow-through facility with flows through each of two parallel raceway lines to Mile Brook (Class B, less than 10 square mile watershed), which in turn flows to the Crooked River (Class AA, tributary to GPA water) and Sebago Lake (Class GPA).

Broodstock Facilities: MDIFW Casco's salmon broodstock originate from two sources. Wild salmon are captured from the Panther Pond dam on Sebago Lake for egg taking and fertilization, as described above, and then returned to Sebago Lake. Also, three hundred 2-year old salmon and three hundred 3-year old salmon broodstock, which were raised from eggs previously hatched at MDIFW Casco, are maintained on site in raceway pools. The 3-year old "domestic" broodstock are stripped of eggs in November, released in various waters per MDIFW's fish stocking needs, and replaced with three hundred fall yearlings from on-site stocks to repeat the cycle. The wild and "domestic" strains are kept separate, with wild strains used at Casco and "domestic" strains shipped to other facilities.

Hatchery Facilities: MDIFW Casco's hatchery facilities consist of forty-four, 10-foot long by 1.2-feet wide by 6-inches deep (operational depth) aluminum egg/fry troughs, although MDIFW Casco reports only eight to twelve troughs are used at any time. The troughs have a flow-through rate of 6 gallons per minute (gpm) per set of two troughs for a total discharge flow of 36 gpm or 51,840 gallons per day as used. The troughs are arranged so that four adjacent troughs flow into another four adjacent troughs downgradient (5 sets equaling 40 troughs) and so that two adjacent troughs flow into another two adjacent troughs downgradient (1 set equaling 4 troughs). This calculation is based on use of one group of eight troughs and one group of four troughs at a time. Salmon eggs are brought into the MDIFW Casco hatch house in November. Eggs are placed in hatching baskets and inserted into the aluminum egg/fry troughs. Salmon eggs hatch in the spring. After the swim-up stage, the baskets are removed. From November through April, through the egg incubation, hatching, and non-feeding fry stages, no feeding occurs. Fry begin being fed in May of each year for 4-6 weeks with automatic fish feeders. In June when they are approximately 1-2 inches in length the salmon are moved to raceway pools for rearing. Hatch house wastewater is discharged via flow-through directly to Mile Stream as described below. The hatchery building is typically not operated from June when fry are moved through October each year. However, this permitting action is providing for possible use of, and discharge from, the hatchery building during at least a portion of the summer months.

Rearing Facilities: MDIFW Casco's rearing facilities consist of two lines of covered concrete raceways referred to as the east side and west side raceways because of their orientation on the site. Fry are reared in the raceways until they achieve appropriate sizes for stocking. Both sets of raceways consist of three rows of four, 5-foot wide by 100-foot long pools (raceway series A-D, total 24 pools) followed by two rows of two, 8-foot wide by 100-foot long pools (raceway series E-F, total 8 pools) for a total of 32 raceway pools. Each pool is operated at a depth of 24-inches. A 16-foot wide by 8-foot long showpool is located at the end of each of the two raceway lines. Feeding is conducted automatically by demand. MDIFW Casco indicates using an average of 107 pounds of food per day, a maximum of 179 lbs/day, and a period of peak feeding during October through December.

Typically, brown trout are kept in the east side raceways and salmon, rainbow trout, brook trout, and extra brown trout are kept in the west side raceways. New salmon are typically placed in the first set of 5-foot wide west side raceway pools and rainbow trout fry in the first set of 8-foot wide west side raceway pools. The remainder of the pools are utilized according to species, sizes, and numbers of fish. Fish are raised for both spring and fall stocking. In the spring, MDIFW stocks 6-8-inch long spring yearling salmon (one year old) and 8-10-inch long spring yearling brook trout (one-year old plus). In the fall MDIFW stocks 10-13-inch long fall yearling salmon (one year old plus), 4-6-inch long fall fingerling brown trout (less than one year old), 10-12-inch long fall yearling brown trout (one year old plus), and 12-14-inch long fall yearling rainbow trout (one year old plus). Replacement fish and eggs are brought on station as described above. MDIFW Casco indicates a maximum quantity of fish on station of 545 broodstock weighing 955 lbs, 110,388 first year fish weighing 23,322 lbs, and 28,669 second year fish weighing 16,060 lbs for a total of 139,602 fish weighing 40,337 lbs.

Wastewater Treatment: To clean the raceways, 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 was located a screened 1.5-foot long "quiescent zone" with a covered discharge pipe. The cleaning wastewater discharge pipes for the first four series of raceway pools (series A-D) were connected and discharged through a 12-inch diameter iron pipe to Mile Stream designated as Outfall #002A. The cleaning wastewater discharge pipes for the fifth series of raceway pools (series E) discharged through a 15-inch diameter iron pipe to Mile Stream, previously unmonitored. The cleaning wastewater for the sixth series of raceway pools (series F) as well as the flow-through wastewater for all raceway pools (series A-F) discharged through a 24-inch diameter iron pipe to Mile Stream designated as Outfalls #001A for flow-through and Outfall #001B for series F cleaning wastewater. As described above, various combinations of the discharges from Outfalls #001A, #001B, and #002A were previously designated as Outfalls #003A and #004A. The Outfall #001A/#001B pipe discharged to a depth of one-foot below mean low water. The discharge pipe "plug" was removed at the beginning of cleaning pools in series A-D and when approximately one-fourth of each pool in series E-F were cleaned, sending cleaning flows as indicated above. After the raceway pool and quiescent zone screen were cleaned, the quiescent zone plug was replaced and the cleaners move to the next raceway pool. Raceways were cleaned once per week in a single day during the summer and once every 2-3 weeks as needed during the winter when numbers of fish were reduced. MDIFW Casco indicates that it takes approximately 15-30 minutes to clean each raceway pool. MDIFW Casco indicates that raceways housing fall yearling brown trout are not cleaned due to stress on the fish and because the fish appear to "self clean" the raceways they inhabit as they stir up and resuspend any settled material through increased activity. MDIFW Casco discharged hatchery building flow-through and cleaning wastewater through a 15-inch diameter iron pipe to Mile Stream, previously unmonitored, discharging at the mean low water level. The showpools at the end of each raceway line provided a minimal area for wastewater settling and removal of solids from cleaning flows from raceway series F and flow-through wastewater from all raceway pools.

Wastewater Treatment Upgrade: During 2005, MDIFW Casco underwent a series of facility improvements and upgrades to incorporate the following:

- a dissolved oxygen management system for the flow-through water with bulk liquid oxygen and low head oxygen contact chambers placed at the head of every other set of raceway pools.
- installation of a common raceway drain line to intercept all existing rearing facility drains to a new wastewater treatment system.
- improved management of rearing facility wastewater flows to route all flow-through wastewater through a 30-micron-microscreen drumfilter. Facility cleaning wastewater and microscreen filter backwash of captured solids is routed to a 20-foot by 20-foot by 16-foot (48,000 gallon) clarifier, with settled materials automatically or manually pumped to a 20-foot by 20-foot by 16-foot (48,000 gallon) adjoining sludge storage/dewatering tank designed to provide a minimum of 6-months of storage capacity. Sludge tank supernatant

is routed to the clarifier and clarifier supernatant discharged through the drum filter to the receiving water. Accumulated sludge is removed for proper disposal as needed.
- use of automated composite effluent samplers.
- installation of raceway flow baffles to provide for better flow and transport of waste materials to the quiescent zones.
- increased size of the quiescent zones to provide for better settling and holding of solid waste material until they are removed.

MDIFW Casco's revised standard procedures involve full wastewater treatment of all rearing facility effluent flows and discharge through Outfall #005A, a 36-inch diameter pipe. However, MDIFW has designed for a bypass of the facility drum filter in the event of routine filter maintenance or in the case of unforeseen filter equipment malfunction and necessary major repairs. During such times, MDIFW will not clean or feed its fish so that all effluent discharges will consist of flow-through water only. Additionally, MDIFW Casco has maintained the separate previously unlicensed outfall for wastewater discharges from the facility's hatch house, designated as Outfall #006A in this permitting action. Regardless of the scenarios described, MDIFW Casco's discharges are 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 467.9.B(4) classifies Mile Brook (Casco) as a Class B water. Maine law, 38 M.R.S.A., Section 465.3, describes the standards for Class B waters. The Department has determined that Mile Stream, at the point of discharge, has a watershed of 7.75 square miles. Maine law, 38 M.R.S.A., Section 464.4.A(1) states, "*...the department may not issue a water discharge license for...direct discharge of pollutants to waters having a drainage area of less than 10 square miles, except that discharges into these waters that were licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist*".

Maine law, 38 M.R.S.A., Section 467.9.B(2) classifies the Crooked River as a Class AA water. Maine law, 38 M.R.S.A., Section 465.1, describes the standards for Class AA waters.

Sebago Lake is classified as a Class GPA water pursuant to Maine law, 38 M.R.S.A., Section 465-A. Therefore, Mile Stream at the point of discharge, being approximately 7.5 miles upstream of Sebago 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:

In the July 2000 WDL it stated that Mile Stream, the Crooked River, and Sebago Lake were all attaining the standards of their classifications. 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 *Mile Brook (Casco)* (Assessment Unit ME0106000101, Segment ID 605R01), listed in Category 5-A, Rivers and Streams Impaired by Pollutants Other Than Those Listed in 5-B Through 5-D (TMDL Required). The listing identifies a 2.0 mile segment of Class B water determined in 2000 (post WDL issuance) to be not attaining its aquatic life standard due to impacts from the Casco station and indicates that a TMDL (total maximum daily load) analysis is planned for 2006. To elaborate, Department biomonitoring conducted in Mile Stream below the Casco station in 2000 revealed that the macroinvertebrate communities in the brook are only indicative of Class C waters, evidence of non-attainment of the Class B aquatic life standard. 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 Casco facility causes or adversely contributes to the consumption advisory. However, the Department finds that MDIFW Casco has caused or adversely contributed to the other non-attainment conditions indicated and is establishing effluent limitations, monitoring and operational requirements accordingly, including requirements for ambient macroinvertebrate biomonitoring (Permit Special Condition N) and ambient monitoring for dissolved oxygen and temperature (Permit Special Condition O).

If it is determined that non-attainment conditions persist in the receiving water(s) and that MDIFW Casco causes or contributes to those conditions, this permitting action may be reopened pursuant to Permit Special Condition P 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* o(r) *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 Casco 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 Casco 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.

The previous licensing action established the following outfall designations and corresponding processes: Outfall #001A for effluent discharges from the show pools when not cleaning the show pools; Outfall #001B for effluent discharges from the show pools when cleaning raceways that discharge through the show pools; Outfall #002A for effluent discharges from raceways being cleaned that discharge directly to the receiving water and not through the show pools; Outfall #003A for a summary of the phosphorus mass (kg/day) discharged from Outfalls #001A or #001B and #002A; and Outfall #004A for a summary of the flow, mass of fish on hand, and total phosphorus mass (kg/month, kg/year) values from Outfalls #001A, #001B, and #002A. 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 to correspond to actual physical discharge points only. The MDIFW Casco facility outfalls shall be designated as: Outfall #005A for all rearing facility effluent discharges and Outfall #006A for the hatchery facility effluent discharge. These outfall designations are being renumbered to distinguish between the pre and post upgraded facility. Although the separate hatchery facility outfall was not established in the previous licensing action, the Source Description of the WDL stated, "(t)*he facility includes a hatchery house with incubators and troughs for hatching eggs and a fish rearing facility consisting of concrete raceways in which the fry are raised to stocking stage. The facility discharges a daily maximum of 2.9 MGD of fish hatchery wastewater*". Thus, indicating that the Department was aware of the discharge and considered it to be included in the WDL.

a. Flow: The previous licensing action established a daily maximum flow discharge limit of 2.9 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 and as stated for Outfall #004A, the 2.9 MGD limit related to the total discharge flow from the facility. 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. As noted above, the previous licensing action did not designate a separate hatchery building discharge, but included it in the facility's total licensed discharge. In this permitting action, the Department is eliminating the daily maximum flow limit and establishing monthly average flow limits of 2.9 MGD for effluent discharges from the rearing facility (Outfall #005A) and 0.052 MGD for effluent discharges from the hatchery facility (Outfall #006A). These discharge flow limits are based on information provided by MDIFW on facility operations and design capacity and to provide the facility with operational flexibility. However, since Mill Stream is a tributary to a Class GPA water and a water with less than a 10 square mile watershed, in which no new direct discharges of pollutants are allowed, mass pollutant limits shall be based on previous license limits, 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 Casco facility discharges its treated effluent via a discharge pipe into the side of Mile Stream. 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 ¼ of the 1Q10 stream design flow to prevent substantial acute toxicity within any mixing zone. The regulation goes on to say that where it can be demonstrated that a discharge achieves rapid and complete mixing with the receiving water by way of an efficient diffuser or other effective method, analyses may use a greater proportion of the stream design, up to including all of it.

In developing the previous WDL, the Department utilized a chronic dilution of 1.14:1 based on a 7Q10 low flow value of 0.42 MGD and MDIFW Casco's daily maximum discharge limit of 2.9 MGD. However, this approach appears to have been incorrect. The dam on Pleasant Lake, which feeds Mile Stream, is privately owned. There is a formal water level order for Pleasant Lake, dated August 15, 1978, but there is no formal requirement specifying a minimum flow that must be passed over or through the dam to Mile Stream. MDIFW Casco reports that upper portions of Mile Stream are significantly or completely dewatered on occasion. At those times, the MDIFW Casco discharge constitutes the only flow in that portion of Mile Stream. Based on this information, the Department must assume a seasonal low flow of 0 cubic feet per second in Mile Stream and acute (1Q10), chronic (7Q10) and harmonic mean dilution factors of 1:1, representative of the fact that the MDIFW Casco discharge sometimes constitutes the only

river flow. If a guaranteed minimum flow from the Pleasant Lake dam is established in the future, this determination may be revisited.

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). 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. The previous licensing action established effluent limits and monitoring requirements for BOD and TSS for Outfalls #001A, #001B, and #002A, as described above. 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 NEGs, EPA recommended national TSS effluent limitations for re-circulating 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 NEGs 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 NEGs, 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 NEGs, "*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 Casco 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 and Outfall #006A. 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 P of this permit.

Pursuant to 38 M.R.S.A., Section 464.4.A, "*...the department may not issue a water discharge license for...*" (1) a new "*direct discharge of pollutants to waters having a drainage area of less than 10 square miles* and (2) a "*New direct discharge of domestic pollutants to tributaries of Class-GPA waters*". Therefore, 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 2.9 MGD, and a conversion factor of 8.34 lbs/gallon to yield a total facility monthly average mass limit of 48 lbs/day. To allocate this mass limit between the rearing facility discharge (Outfall #005A) and the hatchery facility discharge (Outfall #006A), the Department has used the hatchery discharge flow limit of 0.052 MGD in the above formula to calculate a monthly average mass limit of 0.9 lbs/day. The rearing facility discharge was then allocated the remaining 47.1 lbs/day as a monthly average limit. The daily maximum mass limits are based on the newly established daily maximum concentration limits of 10 mg/L, new monthly average flow limits of 2.9 MGD and 0.052 MGD, and a conversion factor of 8.34 lbs/gallon to yield 242 lbs/day and 4.3 lbs/day daily maximum limits for Outfalls #005A and #006A, respectively. The Department anticipates that the monthly average mass limits will be limiting factors for the MDIFW Casco discharge, thus meeting the provisions of 38 M.R.S.A., Sections 464.4.A(1) and (2) noted above. As the number and mass of fish on station increases, MDIFW Casco 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 Casco facility are two-fold in that the facility discharges its effluent to Mile Stream (Class B), which flows to the Crooked River (Class AA), both of which serve as tributaries to Sebago Lake (Class GPA). Both streams/rivers and lakes are sensitive to these pollutants, but must be managed differently to avoid adverse effects.

The previous licensing action contained a monthly average phosphorus concentration limit of 0.026 mg/L, a monthly average mass limit of 0.29 kg/day (0.64 lbs/day), and a monthly average mass reporting requirement in pounds of phosphorus per 100 pounds of fish on hand for Outfalls #001A, #001B, and #002A. 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 or use of an automatic compositer, at a frequency of once per month. The previous licensing action also established a monthly average phosphorus mass limit for Outfall #003A consisting of 0.29 kg/day (0.64 lbs/day) as well as both a monthly average mass reporting requirement in kg/month and an annual mass limit of 106.8 kg/year (235.5 lbs/yr) for Outfall #004A, all required to be calculated at a frequency of once per month. 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, Casco, Mile Brook to Crooked River, tributary to Sebago Lake

Sebago Lake is a large, oligotrophic, coldwater fishery lake, which serves as the public water supply for Portland and surrounding communities. Its water quality category is outstanding with a high level of protection, so its acceptable increase in lake phosphorus concentration is 0.5 ppb. The resulting allowable increase in phosphorus load to the lake is 1,068.4 kg/yr (2,355 lbs/year). Based on the rationale described above, the portion of this load allocated to point sources is 0.10 X 1,068.4 kg/yr or 106.8 kg/yr (236 lbs/year). This is equivalent to the limit established in the previous licensing action and limited information on the phosphorus discharge from the Casco hatchery suggests it currently discharges about this amount of phosphorus.

The 236 lbs/year water quality based total phosphorus mass limit entails MDIFW Casco's allowable total phosphorus discharge contribution to Sebago Lake per year. The Department recognizes that the water source, Pleasant Lake, contains ambient levels of phosphorus that would naturally enter Sebago Lake (44 lbs/year, 20 kg/year). The Department calculated MDIFW Casco's total allowable phosphorus discharge, including background levels of phosphorus in the source waters, to be 280 lbs/yr (126.8 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 of BPT values when formal BPT based limits are absent. Past demonstrated performance is not being utilized in this analysis for several reasons. First, as outlined above, there are questions as to the accuracy of past data. Second, MDIFW Casco has undergone significant upgrades, which are anticipated to result in marked improvements in effluent quality and reductions in phosphorus discharges. 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. Allocation of the phosphorus mass limit between MDIFW Casco's hatchery and rearing facilities is described below.

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 form 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 1:1 described in Fact Sheet Section 6b, Dilution Factors, is being utilized in calculation of a water quality based effluent concentration limit of 0.035 mg/L. As this limit is less restrictive than the 0.026 mg/L concentration limit established in the previous WDL and in consideration of the recent facility upgrade conducted, 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.

Pursuant to 38 M.R.S.A., Section 464.4.A, "*...the department may not issue a water discharge license for...*" (1) a new "*direct discharge of pollutants to waters having a drainage area of less than 10 square miles* and (2) a "*New direct discharge of domestic*

pollutants to tributaries of Class-GPA waters". Therefore, to calculate applicable mass limits for phosphorus, the Department must allocate the limit between both Outfalls #005A and #006A. To do this, the Department is utilizing the monthly average concentration limit of 0.035 mg/L (ppm), the hatchery facility monthly average flow limit of 0.052 MGD, and a conversion factor of 8.34 lbs/gallon times 365 days to yield a mass limit of 5.5 lbs/year for Outfall #006A. The rearing facility discharge (Outfall #005A) was then allocated the remaining 274.5 lbs/year limit. The Department believes the revised water quality based mass limits will be protective of the receiving water and its designated uses and is therefore establishing annual phosphorus mass limits as described above. A daily maximum mass limit is not being established to provide MDIFW Casco with management flexibility to meet the yearly mass limits. However, this permitting action is requiring MDIFW Casco 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 and in consideration of recent facility upgrades, this permitting action does not establish a schedule of compliance for its implementation. The revised phosphorus mass limit is in effect as of the effective date of this permitting action.

Mile Stream, the Crooked River, and Sebago Lake will all receive phosphorus discharged from the Casco facility. Each of these receiving waters is 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 Sebago Lake and seasonal phosphorus concentration limits based on water quality specific needs in Mile Stream. 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 P 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 waters with less than 10 square mile watersheds contained in 38 M.R.S.A., Section 464.4.A(1) and tributaries to GPA waters contained in 38 M.R.S.A., Section 464.4.A (2) and (3). Therefore, if MDIFW Casco 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, #002A, and #004A to correspond to the individual raceway lines and the combined total on site. 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 (LC_{50}s) 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 LC_{50} of 62.1 ul/l (mg/L) and Channel Catfish had a 96-hour LC_{50} 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 1:1 described in Fact Sheet Section 6b, Dilution Factors, yields the following acute water quality based effluent limit:

1.56 mg/L (acute criteria) x 1.0 (dilution) = 1.6 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 Casco uses approximately 25 gallons of formalin per year for treatment of fungal infections on eggs and does not use formalin on fish.

MDIFW Casco administers formalin between mid-November and January for 15-minutes every day when the water temperature is above 5 degrees Celsius (41F), then every other day after it has dropped below 5 degrees C. MDIFW Casco stops administering formalin when the eggs reach the "eyed" stage of development. Approximately 0.2-gallons (760 ml) of undiluted formalin is administered directly to each egg trough to achieve a dose of 1,667 ppm. As described in Fact Sheet Section 2c, MDIFW Casco typically uses eight to twelve troughs, however during the time of year when formalin is applied, it uses a maximum of eight troughs. The troughs have a flow-through rate of 6 gallons per minute (gpm) per set of two troughs for a total discharge flow of 24 gpm based on the physical arrangement of the troughs and the assumption that eight troughs are being operated. The 24 gpm rate times the 15-minute treatment period yields 360 gallons of hatchery facility wastewater available for dilution of the 0.8 gallons formalin administered. As Outfall #006A is separate from Outfall #005A, no other facility wastewater flows provide dilution. The end of pipe concentration from egg treatment can be calculated as follows:

360 gal facility wastewater / 0.8 gal formalin = 450:1 dilution
1,000,000 ppm (undiluted) formalin / 450 = 2,222 ppm formalin discharged

This figure exceeds MDIFW's target concentration of 1,667 ppm. Therefore, MEDEP recommends that MDIFW revisit the volume of formalin added per trough.

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 is significantly more stringent than the potential effluent formalin concentrations from egg treatments and is therefore being established in this permitting action. As the calculated acute limit of 1.6 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. From the effective date of the permit until May 31, 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 June 1, 2009, the 1.6 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 (0.8 gallons) times the specific gravity of formalin (9.13 lbs/gal), resulting in a value of 7.3 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 18.

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 Casco 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 6) and E.

h. 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, #001B, and #002A, 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.

i. Duration of Discharge: The previous licensing action required the licensee to report the numbers of hours per month that raceways were cleaned. This permitting action eliminates this requirement, 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.

j. Receiving Water Study: The previous licensing action required the licensee to monitor dissolved oxygen, BOD, TSS, and total phosphorus in Mile 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, ambient dissolved oxygen and temperature monitoring, 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, 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. 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, as well as anticipated improvements in effluent quality over previous facility discharges due to improved wastewater treatment infrastructure and operations, 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., Section 464.4.A(1) states, "*...the department may not issue a water discharge license for...direct discharge of pollutants to waters having a drainage area of less than 10 square miles, except that discharges into these waters that were licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist*". The Department has determined that Mile Stream, at the point of discharge, has a watershed of 7.75 square miles. The previous licensing action required the licensee to submit a study of alternatives to the discharge of hatchery wastewater to Mile Stream (Practical Alternatives Study) within six months following the effective date of the WDL. 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 is required to submit to the Department an ADS report for the Casco 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 / SHOW POOL 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 required the licensee to clean its settling basins / show pools 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. The previous action 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, this requirement is being eliminated and measurement of waste deposition left to the discretion and responsibility of MDIFW Casco.

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 Casco 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 NEGs, 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 Casco to continue to report therapeutic agents used at the facility that have the potential to be discharged to the receiving water.

Sodium Chloride: MDIFW Casco may use sodium chloride (NaCl, salt) for treatment of fungal infections or external parasites on brown trout in the spring and early summer as needed, with a maximum use of approximately 2,100 pounds of salt per year. MDIFW Casco anticipates that a treatment would take place daily for a one week period and consist of placing two 50-pound blocks of salt in the upper pools each of three raceway lines housing brown trout for a total of 300 pounds of salt per day. The salt would be diluted in the full Outfall #005A waste-stream (2.9 MGD) prior to discharge to the receiving water. The concentration in the effluent can be calculated as follows:

300-lbs NaCl divided by 2.9 million gals divided by 8.34 lbs/gal = 12.4 ppm salt discharged

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. The effluent concentration calculated above would be subject to further dilution upon entering the receiving water. 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 Casco 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 Casco reports that no chlorine based products are used at the facility in such a way that they will enter the waste-stream or receiving water. Therefore, this permitting action eliminates previously established effluent limitations for chlorine. MDIFW Casco reports that it uses approximately 0.5 gallons of iodine per year for disinfecting eggs prior to placing them in the hatchery, but that neither the iodine nor any other disinfectants used on station enter the waste-stream or receiving water.

This permitting action requires MDIFW Casco 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 deminimus 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 Casco facility shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, removal of solids. MDIFW Casco 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 2000 and revealed, as outlined in Fact Sheet Section 5, that macroinvertebrate communities downstream of the facility did not attain the appropriate aquatic life standard.

Based on available data, the Department is concerned with the effects of fish hatchery effluent discharges on rivers and streams in Maine and specifically in Mile Stream. 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 in 2006 to determine attainment of the aquatic life standards following upgrade of the MDIFW Casco facility. This permitting action requires MDIFW Casco to conduct ambient macroinvertebrate biomonitoring annually beginning calendar year 2007. On or before March 1, 2007, MDIFW Casco shall submit a biomonitoring plan for Mile Stream to MEDEP DEA for review and approval. 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 determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, including following the 2006 monitoring, the Department will reopen the permit pursuant to Permit Special Condition P, to modify or discontinue the biomonitoring requirement.

16. AMBIENT DISSOLVED OXYGEN AND TEMPERATURE MONITORING:

The previous licensing action required the licensee to monitor dissolved oxygen, BOD, TSS, and total phosphorus in Mile 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...*".

Based on the low effluent dilution provided in the receiving water and the need for additional data on the effects of MDIFW Casco's effluent on the water quality of its receiving water, this permitting action requires the permittee to seasonally monitor ambient dissolved oxygen and temperature levels in Mile Stream. The permittee shall monitor ambient dissolved oxygen and temperature (Celsius) from June 1 through September 30 each year beginning the

effective date of this permit at a frequency of once per week and shall report the time of day the monitoring is conducted. The permittee shall report all monitoring results to the Department in a supplemental report accompanying the appropriate monthly discharge monitoring report. Monitoring shall be conducted within two hours of sunrise, or as indicated in a Department approved monitoring plan, at two locations: (1) between the Pleasant Lake dam and the head of the MDIFW Casco facility in an area representing free-flowing conditions and (2) below the MDIFW Casco outfalls in an area representing the dissolved oxygen sag point, unless revised by the Department. The permittee shall also report on the composition of river flow between the dam and the head of the facility. The permittee shall specify if river flow results from flow over the dam and provide the estimated depth of that overflow, or only leakage through the dam and provide the length of time that condition persists in days. On or before three months following the effective date of this permit, MDIFW Casco shall submit a plan for ambient dissolved oxygen and temperature monitoring and instrument calibration/data quality control to the Department's Division of Environmental Assessment for review and approval. The plan shall include a scope of work and schedule, monitoring locations and maps, sampling methods and materials, and reporting procedures for the ambient dissolved oxygen and temperature monitoring program. The plan shall also include procedures for regular instrument calibration to ensure data quality control. Ambient dissolved oxygen and temperature monitoring shall be conducted according to a Department approved monitoring plan.

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

NOAA Fisheries indicated that as MDIFW Casco 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 further commented that from an ecosystem perspective, fish containment would certainly help protect native fauna in the receiving water. In consideration of this information and as the 2005 upgrades of the Casco facility provide significant fish containment management, neither genetic testing nor a CMS is being required in this permitting action.

18. 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 Casco 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 gal. / 2,250 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 gal/124,500 gal = 7.8:1. The end of pipe concentration can be calculated as follows:

1,720 ppm formalin / 55.3 / 7.8 = 4 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:

8,300 gpm x 112 minutes = 929,600 gal facility wastewater during pool discharge
929,600 gal facility wastewater / 15,400 gal pool volume = 60.3:1 initial dilution
969,000 gal settling pond / 929,600 gal facility wastewater = 1.04:1 second dilution
225 ppm formalin / 60.3 / 1.04 = 3.6 ppm formalin discharged

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:

969,000 gal settling pond / 28,800 gal. waste stream = 33.6:1 dilution
25 ppm formalin / 33.6 = 0.74 ppm formalin discharged

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 gal formalin x 9.13 lbs/gallon = 9.5 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.

19. 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 Mile Stream to meet standards for Class B classification, the Crooked River to meet standards for Class AA classification, or Sebago 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 Casco is required to conduct ambient macroinvertebrate biomonitoring during the term of this permit. MDIFW Casco is also required to conduct ambient monitoring for dissolved oxygen and temperature, as specified in Permit Special Condition O and Fact Sheet Section 16. 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 the TMDL analysis noted in Fact Sheet Section 5 indicate that non-attainment conditions persist in the receiving water(s) and that MDIFW Casco causes or contributes to those conditions, this permitting action may be reopened pursuant to Permit Special Condition P and effluent limitations, monitoring and operational requirements, and/or wastewater treatment requirements adjusted accordingly.

20. PUBLIC COMMENTS:

Public notice of this application was made in the Portland Press Herald newspaper on or about June 30, 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.

21. 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

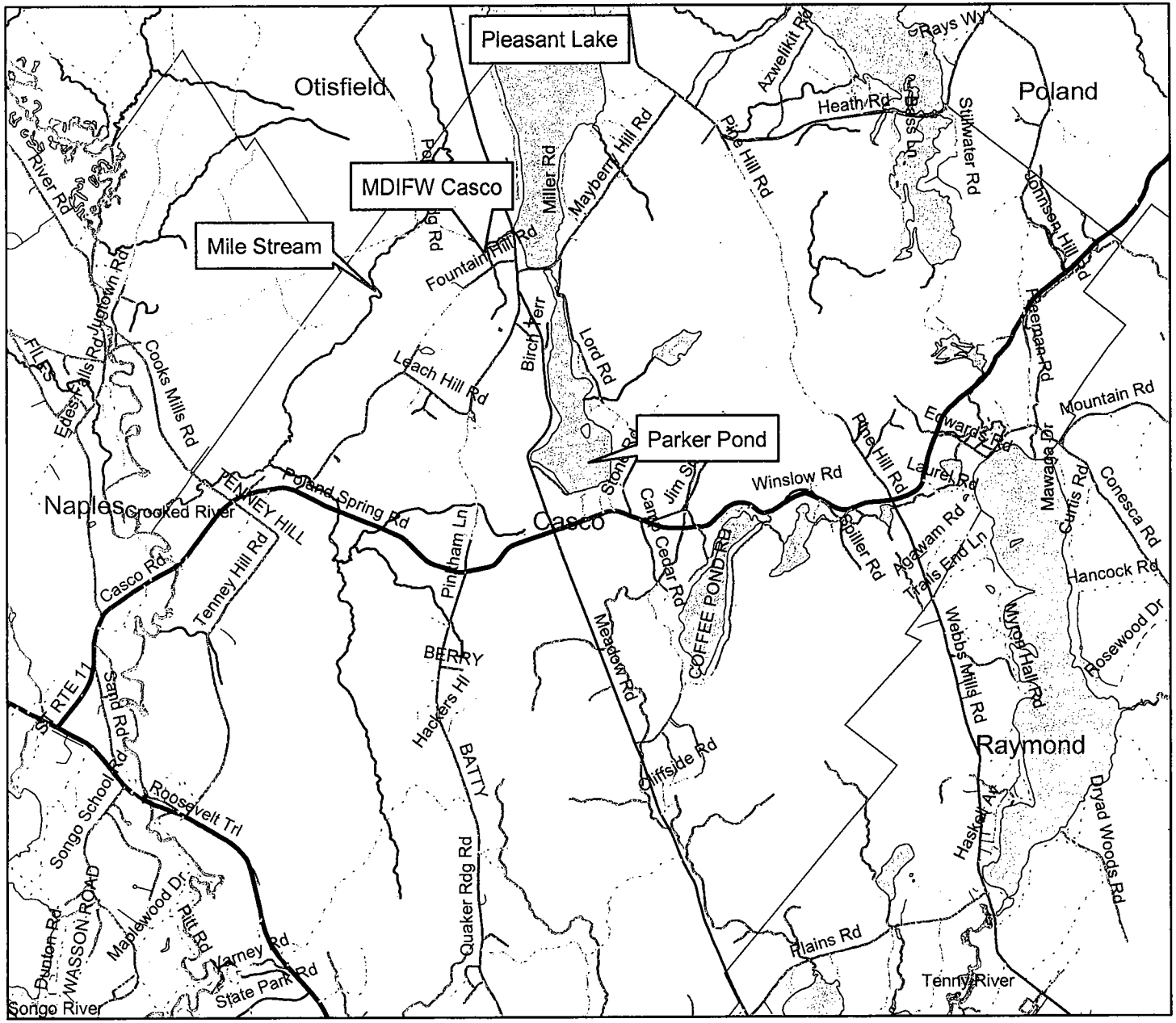
Telephone: (207) 287-6114
Fax: (207) 287-7826
email: Robert.D.Stratton@maine.gov

22. RESPONSE TO COMMENTS:

During the period of March 30, 2006 through May 1, 2006, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued to the MDIFW Wade State (Casco) 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)



Legend

Rivers
- AA
- A
- B
- C

Streams
- AA
- A
- B
- C
- Ponds and Lakes
- Wastewater_Facilities
- Wastewater_Outfalls

Roads

JURISDICTION
- Town Road
- Town Road - Summer
- Town Road - Winter
- State-aided Highway
- State Highway
- Toll Highway
- Private Road
- Reservation Road
- Seasonal Parkway

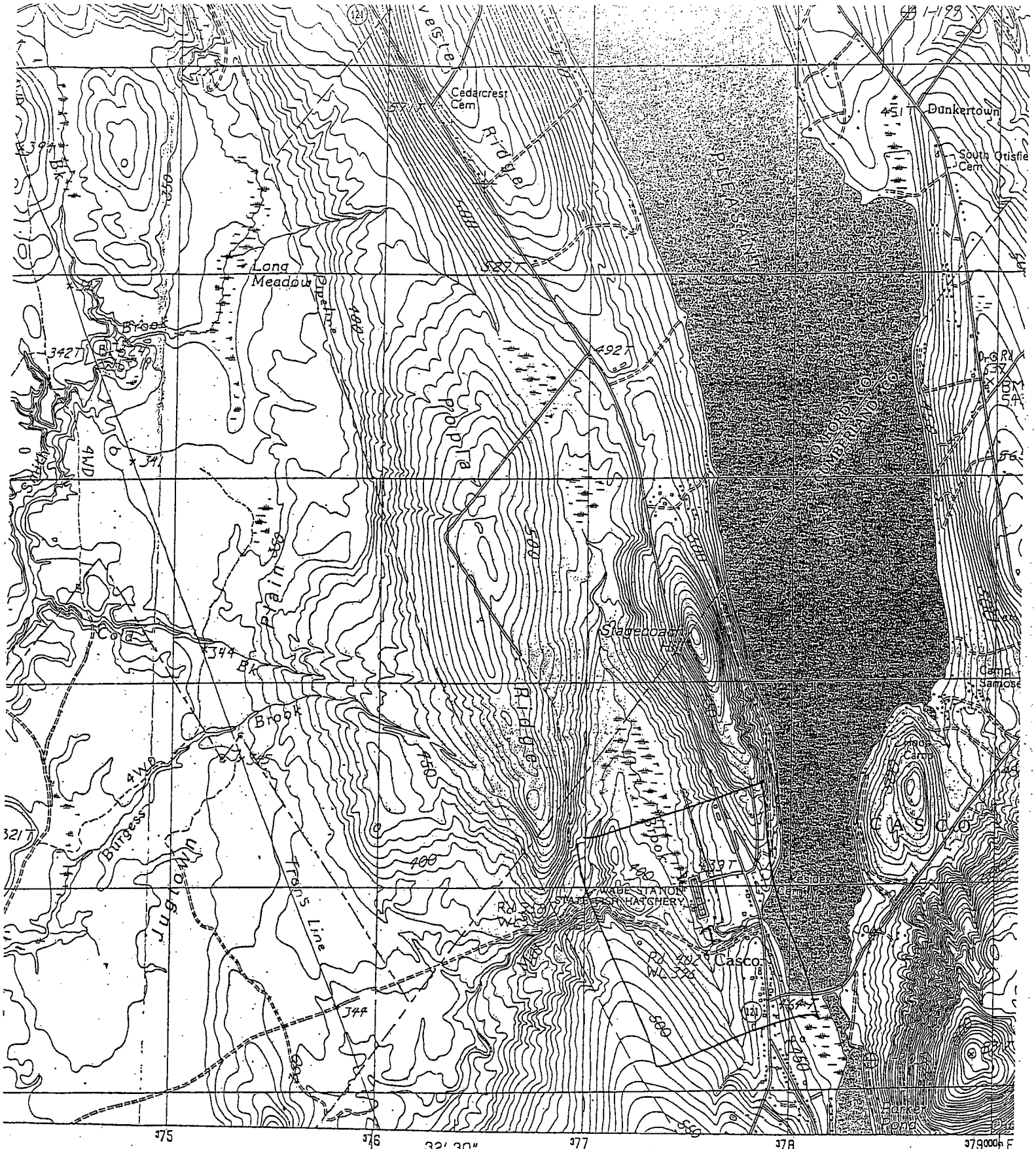
N

0 0.25 0.5 1 1.5 2 Miles

MDIFW Wade State Fish Hatchery
Casco, Maine

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

DEPARTMENT OF ENVIRONMENTAL PROTECTION · STATE OF MAINE ·



SCALE 1:24 000

0 KILOMETERS 1 2
METERS 1000 2000
0 1
MILES
1000 4000 5000 6000 7000 8000 9000 10 000
FEET

CONTOUR INTERVAL 10 FEET

QUADRANGLE LOCATION

1	2	3	1 Waterford Flat 2 Norway

INTERIOR—GEOLOGICAL SURVEY, RESTON

ROAD LEGEND

Improved Road .....
Unimproved Road .....
Trail .....

Interstate Route U. S. Route

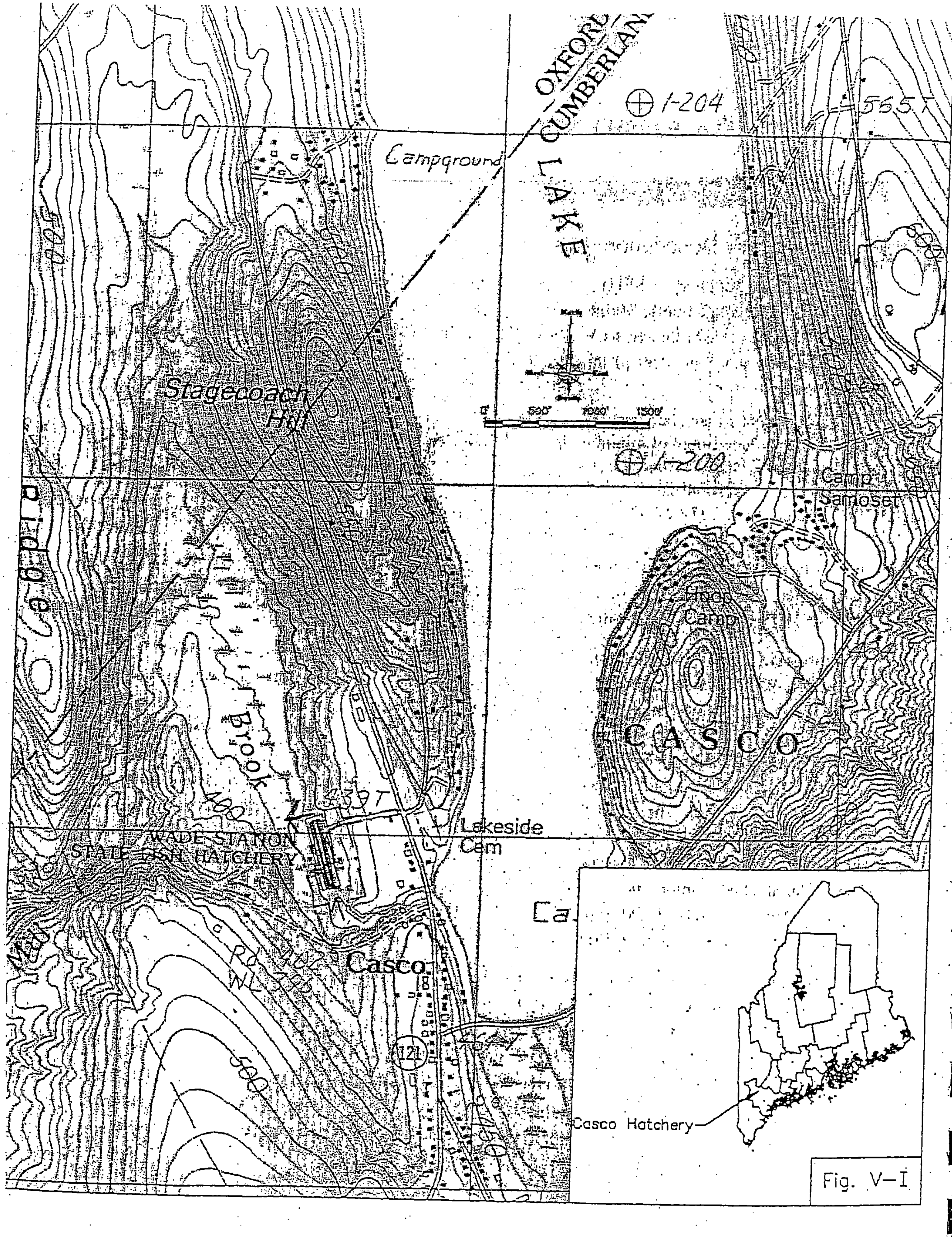
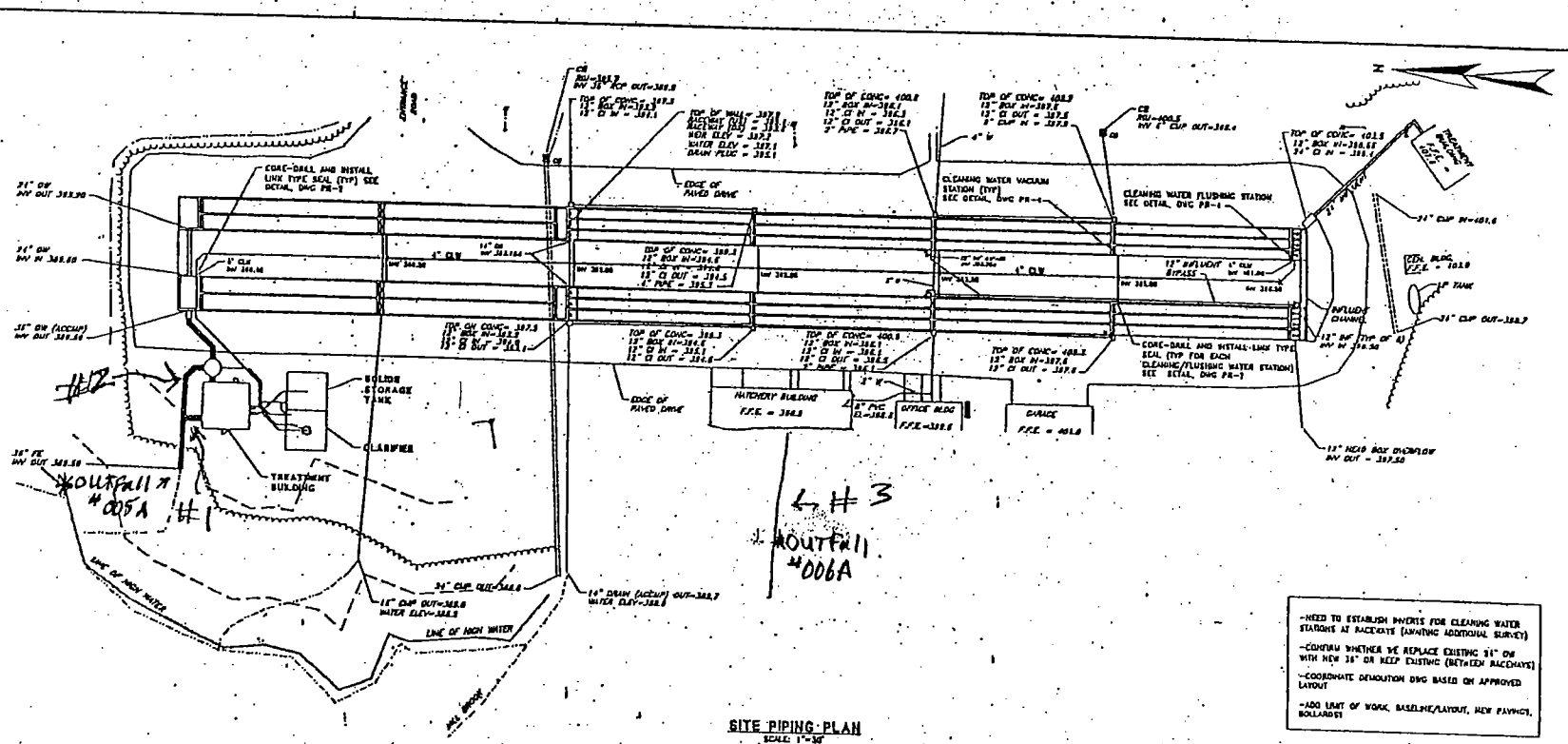

OXFORD
CUMBERLAND
LAKE
I-204
555T
Campground
Stagecoach Hill
0' 500' 1000' 1500'
I-200
Camp Samoset
CASCO
Ridge
Brook
439T
Lakeside Cem
STATE FISH HATCHERY
Casco
121
500
Casco Hatchery

Fig. V–I

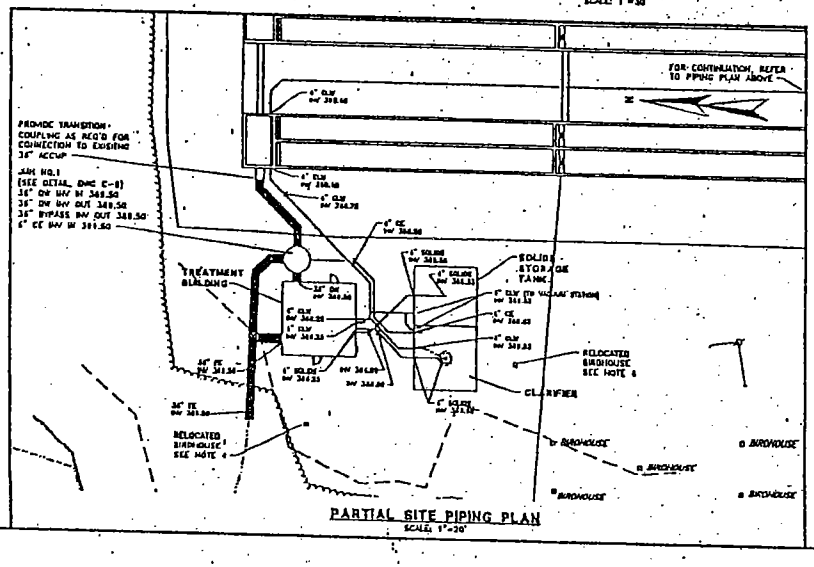
ATTACHMENT B

(Facility Site Plans)

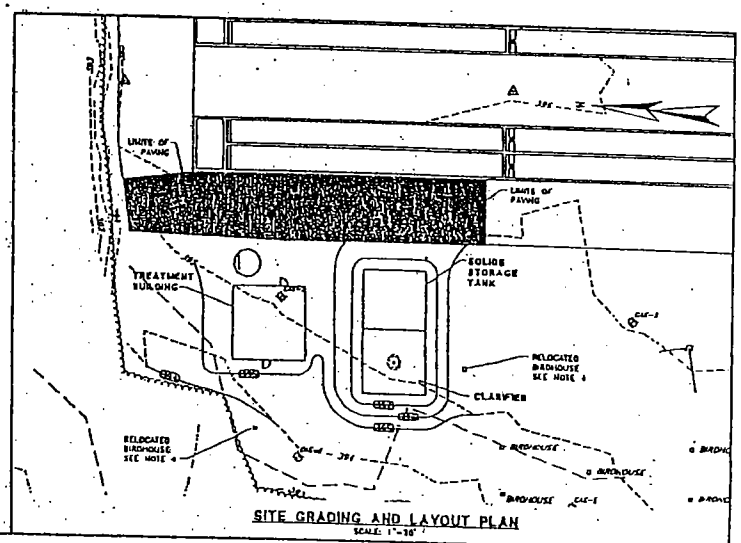


SITE PIPING PLAN
SCALE: 1"=30'

- NEED TO ESTABLISH INVERTS FOR CLEANING WATER STATIONS AT RACEWAYS (AWAITING ADDITIONAL SURVEY)
- CONFIRM WHETHER WE REPLACE EXISTING 36" CMP WITH NEW 36" OR KEEP EXISTING (BETWEEN RACEWAYS)
- COORDINATE DEMOLITION DWG BASED ON APPROVED LAYOUT
- ADD LIMIT OF WORK, BASELINE/LAYOUT, NEW PAVING, BOLLARDS!



PARTIAL SITE PIPING PLAN
SCALE: 1"=20'



SITE GRADING AND LAYOUT PLAN
SCALE: 1"=30'

NOTES:

1. REFER TO DRAWING C-1 FOR ENV. GENERAL NOTES AND ABBREVIATIONS.
2. CONTRACTOR TO NOTE THAT RACEWAYS ARE COVERED.
3. EXACT LOCATIONS OF CLEANING WATER VACUUM STATIONS ARE TO BE FIELD LOCATED WITH DOORWAY OPENINGS AT EACH LOCATION. LOCATIONS SHALL BE SUBJECT TO PRIOR REVIEW AND APPROVAL BY THE ENGINEER. FOR ADDITIONAL INFORMATION, REFER TO VACUUM STATION DETAIL, DWG PR-4.
4. CONTRACTOR IS RESPONSIBLE FOR COORDINATING STORAGE AND RELOCATION OF BIRDHOUSES DISTURBED DURING CONSTRUCTION.

MAINE DEPT OF INLAND FISHERIES AND WILDLIFE
ENHANCED EFFLUENT TREATMENT SYSTEMS
CASCO, RAYMOND AND GRAY, MAINE
CASCO SITE GRADING, LAYOUT, AND SITE PIPING PLANS

DWG C-5
OF

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.