STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

June 5, 2006

Mr. Greg Bell
Dry Mills State Fish Hatchery
158 Weymouth Road
Gray, Maine 04039

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0001121
Maine Waste Discharge License (WDL) Application # W-002031-5Q-B-R
Final Permit/License

Dear Mr. Bell:

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); [redacted])

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17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
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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
DRY MILLS FISH HATCHERY	)	ELIMINATION SYSTEM PERMIT
GRAY, CUMBERLAND COUNTY, ME	)	AND
FISH HATCHERY	)	
#ME0001121	)	WASTE DISCHARGE LICENSE
#W-002031-5Q-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 DRY MILLS FISH HATCHERY (hereinafter MDIFW Gray), 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-002031-5Q-A-R, which was issued on July 21, 2000, for a five-year term. The WDL approved the discharge of a maximum of 1.89 million gallons per day (MGD) of fish hatchery wastewater to Hatchery Brook, Class B from a state fish hatchery and rearing facility in Gray, Maine. The applicant has applied for a slight increase in the effluent flow limit established in the previous licensing action.

PERMIT SUMMARY

January 12, 2001 – The Department received authorization from the U.S. Environmental Protection Agency (USEPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine, excluding areas of special interest to Maine Indian Tribes. On October 30, 2003, after consultation with the U.S. Department of Justice, USEPA extended Maine's NPDES program delegation to all but tribally owned lands. 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 #ME0001121 will be utilized as the primary reference number for the Gray 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 1.89 MGD daily maximum discharge flow limit and establishing a 1.92 MGD monthly average flow limit;
2. establishing BOD and TSS monthly average and daily maximum concentration limits with a provision for the Department to establish new limits in the future based on technology performance analyses of the industry as a whole;
3. establishing BOD and TSS monthly average mass limits based on previous WDL requirements and daily maximum mass limits based on revised concentration and flow limits;
4. establishing seasonal monthly average total phosphorus mass limits based on previous WDL requirements, revised water quality based concentration limits, and daily maximum monitoring requirements;
5. establishing seasonal monthly average and daily maximum orthophosphate mass and concentration monitoring requirements during 2006;
6. 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;
7. establishing a daily maximum mass limit for formalin based on Department best professional judgement (BPJ) and monthly average mass and concentration reporting requirements;
8. 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;
9. establishing a daily minimum effluent limit and monthly average and daily maximum monitoring requirements for effluent dissolved oxygen;
10. establishing minimum monitoring frequency and sample type requirements based on BPJ;
11. restricting approved outfalls to #005A for all facility wastewater discharges;
12. eliminating the reporting requirement for monthly hours of raceway cleaning;
13. requiring a current facility Operation and Maintenance Plan;
14. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration
15. establishing requirements for settling basin cleaning;
16. requiring compliance with existing state salmonid fish health rules;
17. establishing requirements related to proper use and record keeping of therapeutic agents;
18. eliminating effluent limits for chlorine and establishing record keeping requirements for disinfecting/sanitizing agents;
19. establishing BPJ derived minimum treatment technology requirements for the Gray facility;
20. establishing requirements for ambient macroinvertebrate biomonitoring if MEDEP monitoring indicates non-attainment conditions; and
21. 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 April 28, 2006 and revised June 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 DRY MILLS (GRAY) FISH HATCHERY to discharge fish hatchery wastewater consisting of a monthly average flow of 1.92 MGD of fish hatchery and rearing facility wastewater to Hatchery Brook, 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 6TH DAY OF June, 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

FILED
JUN - 7 2006
BOARD OF ENVIRONMENTAL PROT.
STATE OF MAINE

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 (fish hatchery and rearing station)** to Hatchery Brook. 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]*	1.92 MGD *[03]*	---	---	---	---	Daily *[01/01]*	Measured *[MS]*
BOD[2] *[00310]*	32 lbs/day *[26]*	160 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	---	Once/2 weeks *[01/14]*	Composite[3] *[CP]*
TSS[2] *[00530]*	32 lbs/day *[26]*	160 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	---	Once/2 weeks *[01/14]*	Composite[3] *[CP]*
Total Phosphorus[4] **From June 1 – Sept 30 yearly** *[00665]*	0.44 lbs/day *[26]*	report lbs/day *[26]*	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]*	91.3 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]*	91.3 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 Discharge Monitoring Reports (DMRs). Footnotes are found on Pages 7 and 8.

SPECIAL CONDITIONS
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. The permittee is required to conduct **Ambient Water Quality Monitoring** in Hatchery Brook as specified below **from June 1 through September 30 each year**, designated as **Outfall #005B** 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:** Below MDIFW Gray outfall *[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]*

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 7 and 8.

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS , FOOTNOTES:

All sampling and analysis must be conducted in accordance with: (a) methods approved by 40 Code of Federal Regulations (CFR) Part 136, (b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136, or (c) as otherwise specified by the Department. Samples that are sent out for analysis shall be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services unless otherwise approved by the Department. **All effluent limits are gross, end of pipe limits, unless otherwise specified.**

1. Effluent Monitoring: Effluent values shall be determined through sampling at Outfall #005A, the only authorized facility discharge, following all means of wastewater treatment. 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 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 limits and monitoring requirements 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. 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 Outfall #005A, the only authorized facility discharge. 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 (13th) day of the month or hand-delivered to a Department regional office such that the DMR's are received by the Department on or before the fifteenth (15th) day of the month following the completed reporting period. A signed copy of the DMR and all other reports required herein including reports required pursuant to Permit Special Conditions A (footnote 6), F, G, H, 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 December 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 insure compliance. The permittee has recently completed major renovations to numerous MDIFW facilities designed to improve both fish production and effluent quality and has requested a minimum of three years for implementation of more restrictive toxicity based effluent limits. MDIFW proposes to use this time to conduct a comprehensive evaluation of the structural and operational effectiveness of its wastewater discharge treatment systems and to conduct toxicity testing of formalin and potential alternative therapeutics. The permittee shall adhere to the specific required tasks and deadlines detailed below:

1. **Technology and Water Quality Based Effluent Limitations:** The permittee shall ensure that the facility provides wastewater treatment equal to or better than the minimum treatment technology for all wastewater discharges and complies with all technology based effluent limitations, monitoring requirements, and operational requirements established in this permitting action **upon its effective date** and shall ensure that the facility complies with all new toxicity based limits (formalin) **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 Gray is required to submit to the Department for review, an Alternative Discharge Study (ADS) report for the Gray facility to determine if practical alternatives to the discharge exist. The ADS report shall evaluate wastewater treatment infrastructure, technologies, practices or other modifications that will result in the elimination of the discharge to the receiving water or improvement in the effluent quality, pursuant to guidance in Fact Sheet Section 9. *[34099]*

I. SETTLING BASIN CLEANING:

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

J. DISEASE AND PATHOGEN CONTROL AND REPORTING:

MDIFW Gray 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 Gray 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 Gray 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 Hatchery Brook. As macroinvertebrate communities provide indications of the overall ecological health of a receiving water, the Department has determined that biomonitoring is needed to better evaluate attainment of river and stream water classification standards and designated uses, resource impacts, and corrective measures when necessary. In order to address this need, the Department's Division of Environmental Assessment (MEDEP DEA) will conduct macroinvertebrate biomonitoring in the receiving water once during the term of this permitting action to determine attainment of the aquatic life standards. In the event that MEDEP DEA's biomonitoring indicates non-attainment of aquatic life standards in the receiving water, MDIFW Gray shall be required to conduct ambient macroinvertebrate biomonitoring annually thereafter. Prior to any such monitoring, MDIFW Gray shall be required to submit a biomonitoring plan for Hatchery Brook to MEDEP DEA for review and approval, pursuant to Permit Special Condition P. The plan shall be consistent with "*Methods for Biological Sampling and Analysis of Maine's Rivers and Streams*" (DEP #LW0387-B2002, August 2002) and shall include a scope of work and schedule, monitoring locations and maps, methods and materials, and reporting procedures for the biomonitoring program. Biomonitoring shall be conducted according to a Department approved monitoring plan. Results shall be reported to the Department in a biomonitoring report by December 15 each year. If the receiving water is subsequently determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, the Department will reopen the permit pursuant to Permit Special Condition 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 the MDIFW Gray'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 Hatchery Brook. 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 one location below the MDIFW Gray outfall that represents both free-flowing conditions and the dissolved oxygen sag point, unless revised by the Department. **On or before one month following the effective date of this permit**, MDIFW Gray 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 ***[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.

SPECIAL CONDITIONS

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)

Attachment A

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

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

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

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

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

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

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

Finalized May 2006

Attachment B

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

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

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

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

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

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

Finalized May 2006

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
AND
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: April 28, 2006
Revised: June 1, 2006

MEPDES PERMIT NUMBER: # ME0001121
WASTE DISCHARGE LICENSE: # W-002031-5Q-B-R

NAME AND ADDRESS OF APPLICANT:

DRY MILLS 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:

DRY MILLS FISH HATCHERY
158 Weymouth Road
Gray, Maine 04039

RECEIVING WATER / CLASSIFICATION: Hatchery Brook, Class B

COGNIZANT OFFICIAL AND TELEPHONE NUMBER:

Mr. Greg Bell Facility Manager (207) 657-4962
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-002031-5Q-A-R, which was issued on July 21, 2000, for a five-year term. The WDL approved the discharge of a maximum of 1.89 million gallons per day (MGD) of fish hatchery wastewater to Hatchery Brook, Class B from a state fish hatchery and rearing facility in Gray, Maine. The applicant has applied for a slight increase in the effluent flow limit established in the previous licensing action.

2. PERMIT SUMMARY

a. Regulatory - January 12, 2001 – The Department received authorization from the U.S. Environmental Protection Agency (USEPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine, excluding areas of special interest to Maine Indian Tribes. On October 30, 2003, after consultation with the U.S. Department of Justice, USEPA extended Maine's NPDES program delegation to all but tribally owned lands. 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 #ME0001121 will be utilized as the primary reference number for the Gray 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 1.89 MGD daily maximum discharge flow limit and establishing a 1.92 MGD monthly average flow limit;
2. establishing BOD and TSS monthly average and daily maximum concentration limits with a provision for the Department to establish new limits in the future based on technology performance analyses of the industry as a whole;
3. establishing BOD and TSS monthly average mass limits based on previous WDL requirements and daily maximum mass limits based on revised concentration and flow limits;
4. establishing seasonal monthly average total phosphorus mass limits based on previous WDL requirements, revised water quality based concentration limits, and daily maximum monitoring requirements;
5. establishing seasonal monthly average and daily maximum orthophosphate mass and concentration monitoring requirements during 2006;
6. 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;
7. establishing a daily maximum mass limit for formalin based on Department best professional judgement (BPJ) and monthly average mass and concentration reporting requirements;
8. 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;

9. establishing a daily minimum effluent limit and monthly average and daily maximum monitoring requirements for effluent dissolved oxygen;
10. establishing minimum monitoring frequency and sample type requirements based on BPJ;
11. restricting approved outfalls to #005A for all facility wastewater discharges;
12. eliminating the reporting requirement for monthly hours of raceway cleaning;
13. requiring a current facility Operation and Maintenance Plan;
14. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
15. establishing requirements for settling basin cleaning;
16. requiring compliance with existing state salmonid fish health rules;
17. establishing requirements related to proper use and record keeping of therapeutic agents;
18. eliminating effluent limits for chlorine and establishing record keeping requirements for disinfecting/sanitizing agents;
19. establishing BPJ derived minimum treatment technology requirements for the Gray facility;
20. establishing requirements for ambient macroinvertebrate biomonitoring if MEDEP monitoring indicates non-attainment conditions; and
21. 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 20, 1975 – The USEPA issued NPDES Permit #ME0001121 to the Maine Department of Inland Fish and Game for the discharge of an unspecified volume of wastewater from the Dry Mills Fish Hatchery to Hatchery Brook. The Permit was valid through February 15, 1980.

May 11, 1983 – The Maine Board of Environmental Protection issued WDL #2031 for the discharge of a daily maximum of 1.8 MGD of fish hatchery wastewater from the MDIFW Dry Mills Fish Hatchery to Hatchery Stream, Class B-1. The WDL was a renewal of a previously issued license #2031, although it required no monitoring. The WDL was issued for a five-year term.

July 21, 2000 – The Department issued # W-002031-5Q-A-R to the MDIFW Dry Mills State Fish Hatchery for the discharge of a daily maximum of 1.89 MGD of treated fish hatchery wastewater. The WDL was issued for a five-year term.

January 8, 2001 – MDIFW Gray requested that MEDEP modify the daily maximum flow discharge limit in WDL # W-002031-5Q-A-R from 1.89 MGD to 2.82 MGD. Department files contain no information that this request was acted upon.

September 10, 2001 –The Department required monitoring for Outfall #001B, designated for effluent discharges from the settling basin when cleaning raceways, to be conducted by autocompositer.

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-002031-5Q-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 Gray facility. The application was assigned WDL # W-002031-5Q-B-R and MEPDES permit #ME0001121.

d. Source Description/ Facility Operation:

The MDIFW Gray facility, or Dry Mills State Fish Hatchery, was constructed in 1933 as a state aquaculture facility and is located on a 187-acre parcel that also contains the Maine Wildlife Park. Portions of the facility were renovated in the 1960s and 1980s. The MDIFW Gray / Dry Mills facility is a state brook trout hatchery and rearing facility, raising Kennebago strain, Maine Hatchery strain, and/or Kennebago-Maine Hatchery cross strain 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. MDIFW Gray maintains some brook trout broodstock on site, as described below. MDIFW Gray consists of two hatchery buildings, two separate lines of raceway lines for rearing, a facility showpool, and two connected wastewater settling ponds.

In early November each year, Kennebago strain brook trout eggs are obtained from MDIFW Phillips and MDIFW Enfield facilities; Maine Hatchery strain brook trout eggs are obtained from broodstock fish maintained at MDIFW Gray; and Kennebago-Maine Hatchery cross strain eggs are obtained from MDIFW Enfield, and MDIFW Augusta (Governor Hill). Upwards of two million eggs may be taken over the course of three to four weeks. The eggs are immediately moved into the facility hatchery buildings for incubation and hatching. In April-May of each year, Kennebago strain fry are sent to MDIFW Palermo, MDIFW

Embden, MDIFW Enfield, and/or MDIFW Augusta for rearing. Maine Hatchery fry are sent to MDIFW Enfield, MDIFW Palermo, and MDIFW Embden. Cross strain fry are returned to MDIFW Enfield. In November-December of each year, fall fingerlings are sent to MDIFW Casco and MDIFW New Gloucester.

Influent Water: The MDIFW Gray facility is located on an aquifer and its influent water is obtained from several on site sources of spring water. Game Farm Stream Spring Collector #1 and Hatchery Spring Collector #2 both flow to the top of the "Game Farm Line" raceways, located on the east side of the facility and described below. Spring Collector #3 flows into the head of the "Main Line" raceways, located on the west side of the facility and also described below. Additional named water sources, Game Farm Stream Collector #1, Spring Collector #2, Spring Collector #3, Spring Fed Pond #4, and Spring Collectors #5 through #7, unnamed springs, and underdrain systems, which are 4-inch diameter PVC drain tiles that passively collect the groundwater from under the raceways and road, contribute to the rearing flows at various points along the raceway runs. A 500 gallon per minute (gpm) flow of water is supplied to the Game Farm (east side) raceways from the two major springs noted above through two 10-inch diameter HDPE pipes to the headbox of the raceways. A 300 gpm flow of water is supplied to the Main Line (west side) raceways from the one major spring noted above through a 6-inch diameter pipe to its headbox. Excess surface water from behind the raceway buildings is collected in a concrete ditch that runs parallel to the raceways and is further described below. An 8-inch diameter pipe runs from the concrete ditch in the vicinity of Main Line raceway pool #8 to a valve box, then on to the Game Farm Line headbox, where the collected water can be used to supplement the Game Farm Line flows. One 4-inch diameter iron pipe supplies the upper hatchery with water from the large Main Line Spring (Spring Collector #3 above). One 6-inch diameter iron pipe supplies water to the lower hatchery from Hatchery Spring Collector #2.

MDIFW Gray utilizes packed columns for oxygen supplementation and degassing in the lower hatchery. Aeration is also provided through significant drops across stop logs located at the end of each 100-foot long raceway pool. MDIFW Gray installed a new oxygen injection system in 2004. This system utilizes Low Head Oxygenation units at the head of every other raceway (ML #1,3,5,7,9,11,13,15 and GFL #1,3,5). Water dropping over the stop logs is the source of aeration for the remaining raceways. Spring intake screens consist of large mesh screens. MDIFW Gray cleans the source ponds of algae monthly, with organic matter diverted to the settling pond. MDIFW Gray is a flow-through facility with flows through its hatchery and rearing facilities discharged to Hatchery Brook (Class B, less than 10 square mile watershed), followed by Mill Brook (Class B), Libby Brook (Class B), Collyer Brook (Class B), and the Royal River (Class B).

Hatchery Facilities: MDIFW Gray's hatchery facilities consist of two egg incubation and early rearing facilities designated as the upper and lower hatchery buildings. The upper (old) hatchery building is located near the head of the Main Line (west side) raceways and contains twenty-four aluminum troughs that are 120-inches long x 13.5-inches wide x 7.5-inches deep (52-gallons each). The troughs are arranged in four sets of two parallel lines of 3 flow-through troughs. The lower (new) hatchery building is located near the visitor

showpool and contains seventy-two aluminum troughs that are 120-inches long x 13.5-inches wide x 7.5-inches deep (52-gallons each). The troughs are arranged in three sets of four parallel lines of 6 flow-through troughs. Egg incubation is conducted on egg trays inserted in the aluminum rearing troughs (16 ounces of eggs/tray, 5 trays/stack, and 2 stacks/trough equals 160 ounces of eggs/trough). Egg incubation is also conducted in 24 up-welling egg jars, each a cylinder 16-inches tall by 6-inches in diameter. These jars are slowly replacing the egg trays as more efficient, cleaner, and lower impact. After the hatched fish reach the "swim-up" stage, the trays/jars are removed and rearing is continued in the troughs.

The first fry usually begin feeding in late January. Starting in late February of each year through early May (typically), the fry are moved by bucket (approx. 5-pounds of fry/bucket) from the hatcheries to the outside raceways. One raceway of approximately 80,000 fry is set up every other week until all the fry are outside. The hatcheries are then shut down until the following November, with the water turned off and that flow returned to the outside raceways.

The flow rate through the troughs is six gallons per minute per trough for a total of 48 gpm for the upper hatchery building and 72 gpm for the lower hatchery building. Flow-through and cleaning wastewaters are routed directly to the facility settling ponds.

Broodstock Facilities: MDIFW Gray is currently holding 600, twenty-seven month old broodstock brook trout in Game Farm Line pool #5 that will be spawned in November 2006 and stocked immediately afterward as 2 ½ year old adults. MDIFW Gray is also currently holding 1,000, fifteen month old future broodstock brook trout in Game Farm Line pool #1 that will be spawned in November 2007 and stocked immediately afterward as 2 ½ year old adults. This brood fish line is maintained at MDIFW Gray and each new year-class is propagated on-site. All adult brood are spawned and stocked as 2 ½ year old adults.

Rearing Facilities: MDIFW Gray's rearing facilities consist of two lines of covered concrete raceways referred to as the "Game Farm" (east side) and "Main Line" (west side) raceways, each containing a single series of 8-foot wide x 100-foot long x 1.5-foot deep (operational depth) (9,000-gallons each). The Game Farm Line (east side) consists of 5 raceway pools and the Main Line (west side) consists of 16 raceway pools. Flow through water through each line goes to a 34-foot diameter, 2.25-foot deep (operational depth) visitor show pool (15,280-gallons). Flow-through water flows to the facility showpool, while cleaning water is routed directly to the facility settling ponds, as described below.

MDIFW Gray indicates using an average of 152 pounds of food per day, a maximum of 300 lbs/day, and a period of peak feeding during September. MDIFW Gray indicates a maximum quantity of fish on station of: 210,000 first year fish weighing 26,200 pounds, 9,500 second year fish weighing 9,500 pounds, and 600 broodstock weighing 1,800 pounds. The fry are fed with automatic feeders (time controlled), while the larger fish are fed almost exclusively manually (by hand). Occasionally, some (1-2 raceways) of the larger fish may be fed a portion of their daily ration automatically (by touch demand).

Spring yearling fish are stocked during April, May, and early June at sizes of 2.5 fish/pound. Stocking also occurs in October, November, and early December at the following sizes: fall fingerlings at 7.5 fish/pound, fall yearlings at 1 fish/pound, and 2 ½ year old adult broodstock at 3 pounds/fish. New eggs are brought on station from other hatcheries in one gallon jars in coolers (6 jars/cooler). The eggs are disinfected in tubs for 15-minutes in a 100 part per million (ppm) solution of Argentyne (an iodophor) before being placed in the receiving hatchery's troughs. The Argentyne solution does not enter the wastewater stream or receiving water.

e. 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 is located a screened 1.5-foot long "quiescent zone" with a covered discharge pipe routed through a 10-inch diameter iron and PVC pipe to a covered concrete wastewater ditch located beside the raceways (from Main Line pools #9 to #16 and from Game Farm Line pools #1 to #5). The concrete wastewater ditch and the effluent pipes from the hatchery buildings discharge to the facility settling ponds, described below. After the raceway pool and quiescent zone screen are cleaned, the quiescent zone plug is replaced and the cleaners move to the next raceway pool. MDIFW Gray indicates that it takes approximately 20 minutes to clean each raceway pool. Raceway quiescent zone boxes are cleaned every three days. During the months of March, April, August, September, and October, 8-foot quiescent zones are created at the bottom of every other production pool, in addition to the 1.5-foot quiescent zones described above. These new quiescent zones are cleaned 1-2 times weekly as needed and take approximately 5-minutes each to clean. This eliminates the need to clean each raceway from top to bottom every week. During the other months of the year, the entire pool is cleaned as mentioned above (top to bottom) approximately once per month, rather than weekly. This change in raceway cleaning practices is the result of careful growth and feed projections and higher quality feeds greatly reducing the amount of settleable solids produced, thereby keeping the raceways much cleaner and reducing the amount of solids discharged. The showpool is cleaned once per week with wastewater flows discharged directly to the facility settling ponds.

MDIFW Gray's settling ponds consist of two 25-foot x 300-foot x 5-foot deep (561,000-gallons total) rectangular earthen pools connected end to end. The settling pools receive all facility wastewaters as well as runoff from the Maine Wildlife Park located upgradient and roadside ditch runoff and discharge through an outlet dam structure previously designated as Outfall #001A to the headwaters of Hatchery Brook. The settling ponds are cleaned once per year with accumulated materials removed and properly disposed of.

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 467.11.B classifies Hatchery Brook at the point of discharge 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 Hatchery Brook, at the point of discharge, has a watershed of approximately less than one square mile. 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*".

5. RECEIVING WATER QUALITY CONDITIONS:

The MDIFW Gray facility discharges its wastewater to Hatchery Brook (Class B), which flows into Mill Brook (Class B), Libby Brook (Class B), Collyer Brook (Class B), and the Royal River (Class B). The previous licensing action stated, "*In 1994, the latest available information, Hatchery Brook did not attain class B aquatic life criteria due to the fish hatchery discharge." "According to available information, Mill Brook, Libby Brook, and Collyer Brook are attaining the standards of their classification. A 2.5 mile section of the Royal River does...not attain water and organisms statewide water quality criteria due to the presence of Tetrachloroethylene (TCE).*" Department biomonitoring conducted in Hatchery Brook in 1999 revealed that the macroinvertebrate communities in the stream below the facility were attaining Class B aquatic life standards. 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 *Hatchery Brook (Gray)* (Assessment Unit ME0106000102, Segment ID 603R04), listed in Category 2, <u>Rivers and Streams Attaining Some Designated Uses – Insufficient Information for Other Uses</u>. The listing identifies a 0.9 mile segment of Class B water with a monitoring date of 2001. 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

Gray facility causes or adversely contributes to the consumption advisory. However, due to past non-attainment of standards and ongoing concerns with the effects of fish hatchery discharges on receiving waters, this permitting action is establishing effluent limitations, monitoring and operational requirements accordingly, including requirements for ambient macroinvertebrate biomonitoring (Permit Special Condition N), and ambient monitoring for dissolved oxygen and temperature (Permit Special Condition O).

If it is determined that non-attainment conditions exist in the receiving water(s) and that MDIFW Gray 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 Gray 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 Gray 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 settling basin when not cleaning raceways and Outfall #001B for effluent discharges from the settling basin when cleaning raceways. As part of the previous licensing action, monitoring for Outfall #001A was suspended until notified by MEDEP to resume monitoring. 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 Gray facility outfall shall be designated as Outfall #005A for all effluent discharges from the facility's only authorized discharge point.

a. Flow: The previous licensing action established a daily maximum flow discharge limit of 1.89 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 and #001B as described above. As these processes were assumed to be distinctly separate, the 1.89 MGD limit was established for each outfall designation. As part of the previous licensing action, monitoring for Outfall #001A was suspended until notified by MEDEP to resume monitoring. 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 this permitting action, the Department is eliminating the daily maximum flow limit and establishing a monthly average flow limit of 1.92 MGD based on information provided by MDIFW on facility operations and design capacity and to provide the facility with operational flexibility. However, since Hatchery Brook is 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. In developing the previous WDL, the Department utilized a chronic dilution of 1.32:1 based on a 7Q10 low flow value of 0.576 MGD and MDIFW Gray's daily maximum discharge limit of 1.89 MGD. However, this approach appears to have been incorrect. The MDIFW Gray facility's discharge, which is made up of discharges from the facility's various components as well as other flows that enter and flow through its settling ponds, forms or enters the headwaters of Hatchery Brook. As such, the MDIFW Gray discharge constitutes the only flow in that portion of Hatchery Brook. Based on this information, the Department must assume acute (1Q10), chronic (7Q10) and harmonic mean dilution factors of 1:1.

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 Outfalls #001A and #001B as described above. As part of the previous licensing action, monitoring for Outfall #001A was suspended until notified by MEDEP to resume monitoring. 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 Gray facility. (Permit Special Conditions M, Fact Sheet Section 14). BOD and TSS concentration limits of 6 mg/L for monthly average and 10 mg/L for daily maximum shall be in effect for Outfall #005A. These numbers are based on fish hatchery wastewater secondary treatment projections and the Department's judgement that effluent BOD should also be regulated. The Department has evaluated actual and projected post-facility upgrade effluent quality data for a significant number of fish hatcheries in Maine and determined that facilities incorporating the minimum treatment technology outlined can be expected to consistently meet the BOD and TSS concentration limits established in this permitting action. It is the Department's intent to

re-evaluate and potentially revise limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology for the industry. The Department reserves the right to reopen facility discharge permits to establish these limits pursuant to Special Condition 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*". 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 1.89 MGD, and a conversion factor of 8.34 lbs/gallon to yield monthly average mass limits of 32 lbs/day. The daily maximum mass limits are based on the newly established daily maximum concentration limits of 10 mg/L, new monthly average flow limit of 1.92 MGD, and a conversion factor of 8.34 lbs/gallon to yield 160 lbs/day. The Department anticipates that the monthly average mass limits will be limiting factors for the MDIFW Gray discharge, thus meeting the provisions of 38 M.R.S.A., Section 464.4.A(1) noted above. As the number and mass of fish on station increases, MDIFW Gray 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*".

The previous licensing action contained a monthly average total phosphorus concentration limit of 0.03 mg/L, a monthly average mass limit of 0.2 kg/day (0.44 lbs/day), and a monthly average mass reporting requirement in pounds of phosphorus per 100 pounds of fish on hand for Outfalls #001A and #001B. The required minimum detection level for phosphorus was 0.001 parts per million (ppm). Monitoring requirements consisted of a composite of a minimum of four grab samples collected at two hour increments during a facility working day at a frequency of once per month. As part of the previous licensing action, monitoring for Outfall #001A was suspended until notified by MEDEP to resume monitoring. 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.

For river and stream wastewater discharges, the Department typically utilizes a 0.035-mg/L instream phosphorus concentration limit (ambient water quality threshold) and the dilution provided in a receiving water to calculate water quality based effluent limits, a revised method of analysis from that used and available at the time of issuance of the previous WDL. Based on Department research, the AWQC of 0.035 mg/L corresponds to the maximum level at which algae blooms will not typically occur in a receiving river or stream under normal circumstances. As phosphorus is typically of concern under chronic discharge conditions, the 7Q10 dilution of 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.

This permitting action is also establishing a monthly average mass limit for Outfall #005A. As Hatchery Brook has a watershed of less than 10 square miles, with limitations on effluent discharges as stated above, the Department must apply the more stringent of the previous license mass limit and a new water quality based mass limit. The previous mass limit consisted of 0.44 lbs/day. A new water quality based mass limit for Outfall #005A is calculated based on the revised concentration limit of 0.035 mg/L, the monthly average effluent flow limit of 1.92 MGD, and a conversion factor of 8.34 lbs/gallon, which results in a mass limit of 0.56 lbs/day. Therefore, the more stringent total phosphorus mass limit from the previous licensing action of 0.44 lbs/day is being carried forward in this permitting action.

This permitting action is also establishing monitoring and reporting requirements for the daily maximum phosphorus and monthly average and daily maximum orthophosphate masses and concentrations discharged. 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 limits and phosphorous and orthophosphate monitoring requirements that are in effect from June 1 through

September 30 each year. Orthophosphate monitoring and reporting requirements are being established seasonally during 2006. 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. 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 having a drainage area of less than 10 square miles contained in 38 M.R.S.A., § 464.42(A). Therefore, if MDIFW Gray 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 and #001B as described above. As part of the previous licensing action, monitoring for Outfall #001A was suspended until notified by MEDEP to resume monitoring. 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 Gray uses a total of approximately 55 gallons of formalin per year for treatment of fungal infections on eggs and fish and external parasites on fish.

For treatments on eggs, MDIFW Gray administers a concentration of 1,667 ppm (1:600) of formalin for 15-minutes in flow-through water in both the upper (old) and lower (new) hatchery buildings. Because the two hatchery facilities house different species with different needs and stages of development, formalin is not administered at the same time.

In the upper hatchery building, approximately 0.15-gallons (564 ml) of undiluted formalin is administered directly to each line of egg troughs to achieve the desired dose. As described in Fact Sheet Section 2c, MDIFW Gray's upper hatchery building has 8 lines of troughs, however during the time of year when formalin is applied, it uses a maximum of 4 lines of troughs. The troughs have a flow-through rate of 6 gallons per minute (gpm) per line of troughs for a total discharge flow of 24 gpm based on the physical arrangement of the troughs and the assumption that 4 lines of troughs are being operated. The 24 gpm rate times the 15-minute treatment period yields 360 gallons of upper hatchery facility wastewater available for dilution of the 0.6 gallons formalin administered. The flow through water is then blended into the full facility wastewater stream, routed through MDIFW Gray's 561,000-gallon settling ponds, and discharged to the receiving water. The facility's monthly average discharge flow of 1.92 MGD equates to 20,000-gallons in the 15-minute treatment / flow exchange period. The end of pipe concentration from egg treatment in the upper hatchery building can be calculated as follows:

360 gal hatchery wastewater / 0.6 gal formalin = 600:1 1st dilution
20,000-gal facility wastewater - 360.6 gal / 360.6 gal = 54.5:1 2nd dilution
561,000-gal settling ponds / 20,000-gal facility wastewater = 28:1 3rd dilution
1,000,000 ppm (undiluted) formalin / 600 / 54.5 / 28 = 1.09 ppm formalin discharged

In the lower hatchery building, MDIFW also administers approximately 0.15-gallons (564 ml) of undiluted formalin directly to each egg trough to achieve the desired dose. As described in Fact Sheet Section 2c, MDIFW Gray's lower hatchery building has 12 lines of troughs, however during the time of year when formalin is applied, it uses a maximum of 6 lines of troughs. The troughs have a flow-through rate of 6 gallons per minute (gpm) per line of troughs for a total discharge flow of 36 gpm based on the physical arrangement of the troughs and the assumption that 6 lines of troughs are being operated. The 36 gpm rate times the 15-minute treatment period yields 540 gallons of upper hatchery facility wastewater available for dilution of the 0.9 gallons formalin administered. As described above, the flow through water is then blended into the full facility wastewater stream, routed through MDIFW Gray's 561,000-gallon settling ponds, and discharged to the receiving water. The end of pipe concentration from egg treatment in the lower hatchery building can be calculated as follows:

540 gal hatchery wastewater / 0.9 gal formalin = 600:1 1st dilution
20,000-gal facility wastewater - 540.9 gal / 540.9 gal = 36:1 2nd dilution
561,000-gal settling ponds / 20,000-gal facility wastewater = 28:1 3rd dilution
1,000,000 ppm (undiluted) formalin / 600 / 36 / 28 = 1.65 ppm formalin discharged

For treatments on fish, MDIFW Gray administers formalin as needed to achieve a dose of approximately 250 ppm (1:4,000) in the rearing structures. Approximately 7-gallons of undiluted formalin is administered to one raceway pool at a time. Formalin is administered at the head of the affected raceway pool by drip and allowed to flow through the entire line (467 gpm flow) over a one hour period. The flow through water is then blended into the full facility wastewater stream, routed through MDIFW Gray's

561,000-gallon settling ponds, and discharged to the receiving water. The facility's monthly average discharge flow of 1.92 MGD equates to 80,000-gallons in the one hour treatment / flow exchange period. The end of pipe concentration from fish treatment can be calculated as follows:

80,000-gal facility wastewater / 7 gal formalin = 11,429:1 1st dilution
561,000-gal settling ponds / 80,000-gal facility wastewater = 7:1 2nd dilution
1,000,000 ppm (undiluted) formalin / 11,429 / 7 = 12.5 ppm formalin discharged

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 slightly more stringent than the potential effluent formalin concentration from the egg treatments and significantly more stringent than the potential effluent formalin concentration from fish treatments and is therefore being established in this permitting action. As the calculated acute limit of 1.6 mg/L for Outfall #005A represents a new more stringent water quality based limit, the Department is establishing a schedule of compliance (Permit Special Condition G) pursuant to State Law, 38 M.R.S.A., Section 414-A.2 to address the investigation and implementation of operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit and to accommodate toxicity studies proposed by the permittee. From the effective date of the permit until May 31, 2009, formalin effluent limits of 13.5 mg/L, based on the formaldehyde limit contained in the previous licensing action, shall be in effect for Outfall #005A. 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 (10 gallons) times the specific gravity of formalin (9.13 lbs/gal), resulting in a value of 91.3 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 Gray 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 and #001B, but contained no monitoring requirements. This permitting action is carrying forward the pH range limitation of 6.0-8.5 standard units consistent with the pH limit established in discharge licenses for other fish hatcheries, which is considered by the Department as a best practicable treatment standard. This permitting action establishes once per two week effluent pH monitoring on a year-round basis based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.

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 Hatchery Brook 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 include when:

(1) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation and

(2) information is available which was not available at the time of the permit issuance (other than revised regulations, guidance or test methods) and which would justify the application of less stringent effluent limitations at the time of permit issuance.

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

8. ANTI-DEGRADATION

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

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

9. ALTERNATIVE DISCHARGE STUDY

Maine law, 38 M.R.S.A., 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 previous licensing action required the licensee to submit a study of alternatives to the discharge of hatchery wastewater to Hatchery Brook (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 Gray is required to submit to the Department an ADS report for the Gray facility to determine if practical alternatives to the discharge exist. The ADS report shall evaluate wastewater treatment infrastructure, technologies, practices or other modifications that will result in the elimination of the discharge to the receiving water or improvement in the effluent quality.

10. SETTLING BASIN CLEANING:

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

The previous licensing action required the licensee to clean its settling basins when accumulated materials occupy 20% of the basin capacity, or prior to this point if the facility is violating its TSS limits. In this permitting action, the Department is requiring that any settling structures be cleaned when accumulated materials occupy 20% of a basin's capacity, when material deposition in any area of the basins exceeds 50% of the operational depth, or

at any time that said materials in or from the basins are contributing to a violation of permit effluent limits. 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 Gray.

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

Sodium Chloride: MDIFW Gray may use sodium chloride (NaCl, salt) for treatment of fungal infections or external parasites on fish as needed. If necessary, MDIFW Gray anticipates using a maximum of 50 pounds of salt per day on an intermittent basis between June 1 and September 30 for this purpose. The salt would be diluted in the full facility waste-stream (1.92 MGD) prior to discharge to the receiving water. The concentration in the effluent can be calculated as follows:

50-lbs NaCl divided by 1.92 million gals divided by 8.34 lbs/gal = 3.12 ppm salt.

The average concentration of NaCl in seawater is estimated at 35 parts per thousand (ppt) or 35,000 ppm. The Department's Division of Environmental Assessment (MEDEP DEA) reports that sampling results in Maine marine waters indicate salinity levels of approximately 30 ppt or 30,000 ppm. The MEDEP DEA further reports that instream NaCl levels of between 1 and 5 ppt (1,000 and 5,000 ppm) can potentially result in harm to freshwater aquatic life. The effluent concentration calculated above would be subject to further dilution upon entering MDIFW Gray's 561,000-gallon settling ponds. 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.

Calcium Carbonate: MDIFW indicates that it uses small amounts of ground calcium carbonate in the bottom of raceways that house brook trout broodstock to provide for proper fish development by ensuring that calcium levels within the rearing structures approximate those normally found in Maine waters. MDIFW reports that only small amounts are used to provide a thin sand layer in the broodstock pools and that levels are not permitted to exceed the natural range of calcium currently found in Maine waters. In a similar use at its Enfield facility, MDIFW reports applying approximately two pounds of calcium carbonate per week in each of six raceway pools. Residual calcium levels in the MDIFW Gray flow-through water are diluted in the full facility wastewater stream and the 561,000-gallon in-stream settling ponds prior to entering the receiving water. The Department anticipates deminimus levels of calcium discharged and thus is not establishing limitations or monitoring requirements in this permitting action. Instead, use of calcium carbonate shall be consistent with the use and record keeping requirements for therapeutic agents specified above.

Other Materials: MDIFW Gray 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 Gray 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 Gray reports that

it uses "T.B.Q." (a hard surface disinfectant, iodine, and bleach as disinfectants at the facility, but that no disinfectants enter the waste-stream or receiving water. MDIFW Gray further reports that all footbath wastes will be properly disposed of and will not enter the waste-stream or receiving water.

This permitting action requires MDIFW Gray 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 Gray facility shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, removal of solids. MDIFW Gray 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:

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

MEDEP DEA's biomonitoring indicates non-attainment of aquatic life standards in the receiving water, MDIFW Gray shall be required to conduct ambient macroinvertebrate biomonitoring annually thereafter. Prior to any such monitoring, MDIFW Gray shall be required to submit a biomonitoring plan for Hatchery Brook to MEDEP DEA for review and approval, pursuant to Permit Special Condition P. The plan shall be consistent with "*Methods for Biological Sampling and Analysis of Maine's Rivers and Streams*" (DEP #LW0387-B2002, August 2002) and shall include a scope of work and schedule, monitoring locations and maps, methods and materials, and reporting procedures for the biomonitoring program. Biomonitoring shall be conducted according to a Department approved monitoring plan. Results shall be reported to the Department in a biomonitoring report by December 15 each year. If the receiving water is subsequently determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, the Department will reopen the permit pursuant to Permit Special Condition 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 Hatchery Brook 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 the MDIFW Gray'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 Hatchery Brook. 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 one location below the MDIFW Gray outfall that represents both free-flowing conditions and the dissolved oxygen sag point, unless revised by the Department. On or before one month following the effective date of this permit, MDIFW Gray 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 Gray is a state brook trout hatchery and rearing facility that produces fish for stocking in Maine waters as part of MDIFW's responsibilities in managing fisheries. MDIFW Gray does not raise Atlantic salmon as envisioned in the USEPA opinion above and thus is not subject to genetic testing requirements. MDIFW Gray discharges its effluent to

Hatchery Brook, which in turn flows to Mill Brook, Libby Brook, Collyer Brook, and the Royal River. None of these waters are designated DPS river segments.

As MDIFW Gray does not discharge effluent to a Gulf of Maine DPS river segment, a CMS plan is not required for the protection of endangered Atlantic salmon. However, NOAA Fisheries generally comments that from an ecosystem perspective, fish containment would certainly help protect native fauna in receiving waters. In consideration of this information and as infrastructure in place at the Gray facility provide a level of 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 Gray 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 Hatchery Brook to meet standards for Class B 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 Gray may be required to conduct ambient macroinvertebrate biomonitoring during the term of this permit. MDIFW Gray 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 other monitoring efforts indicate that non-attainment conditions exist in the receiving water(s) and that MDIFW Gray 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 27, 2005. The Department receives public comments on an application until the date a final agency action is taken on that application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to Chapter 522 of the Department's rules.

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 April 28, 2006 through May 30, 2006, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued to the MDIFW Dry Mills State (Gray) Fish Hatchery for the proposed discharge. On May 30, 2006, the Department received two correspondences from MDIFW commenting on the Proposed Draft permit: a letter from MDIFW's Superintendent of Hatcheries and an email letter from MDIFW Gray. MDIFW's comments and the Department's responses are summarized below.

Comment 1: Permit Special Condition M, Minimum Treatment Technology Requirement. MDIFW comments that the referenced section requires MDIFW to provide "*60-micron microscreen technology for solids removal and storage. This requirement translates to a microscreen drum filtration unit, water clarifier and sludge storage structure. Construction of each structure would be a major capital expense that could approach $1,000,000 for each system as well as greatly increases each facilities operating and maintenance costs. Department funds are not available for a project of this magnitude.*"

Response 1: The Department refers MDIFW to the referenced section in which it states, "*the permittee shall provide minimum treatment technology for the Gray 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 Gray shall provide* ***treatment equal to or better than*** *the...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*" (emphasis added). The Department does not require that MDIFW

Gray install microscreen filtration, but does require implementation of technology that will perform at levels equal to or better than the minimum treatment technology. This requirement is designed to allow for varied practices, technologies, and technological advances to achieve necessary effluent quality and attainment of receiving water quality standards. If a facility is capable of meeting "*all effluent limitations, monitoring requirements, and operational requirements established in this permitting action*" through the use or modifications of existing facility operations and maintenance practices and infrastructure, then treatment technology upgrades are not necessary.

As stated in Fact Sheet Section 14, the comparative minimum treatment technology which includes microscreen filtration, was based on evaluations of eleven Maine facilities, nine of which belonged to MDIFW, and recommendations from MDIFW's consultant on potential options for facility upgrades. Similar requirements for minimum treatment technology are being established for other fish hatchery and rearing facilities in Maine based on infrastructure common to the industry. This technology is already in place at commercial, federal, and state facilities in Maine. No modifications of the Permit are necessary at this time.

Comment 2: Permit Special Condition A; Fact Sheet Section 6d, Effluent Limitations & Monitoring Requirements, Total Phosphorus. MDIFW states, "*After seventy months of sampling and reporting (July 2000 – April 2006) we have consistently seen total phosphorus levels that exceed the level previously set using the DEP's Best Professional Judgment. At the Dry Mills Hatchery, we are very aware of the need to reduce phosphorus discharge to our receiving waters and take great care in managing our feed levels and maintaining our settling pools to minimize these discharges and feel these limits have been set at a level that will be very difficult to achieve during this licensing period. One possible option would be to allow for the subtraction of any background phosphorus that enters from the public road ditch that flows West along Weymouth Road before discharging into the top of the Dry Mills uppermost settling pool (just downstream of the hatchery and rearing pool discharges). This public road ditch contains running water year-round from various non-hatchery sources including some run-off/pond discharge from the Maine Wildlife Park and certainly contributes some phosphorus, as well as other undesirables for which Dry Mills has in the past been held responsible. In past Waste Discharge Licenses, we have not been allowed to subtract this from our Total Phosphorus discharge, to achieve a more accurate picture of what the Dry Mills facility is truly discharging.*"

Response 2: The Department recognizes that total phosphorus effluent limitations for MDIFW Gray are stringent. As stated in Fact Sheet Section 4, "(t)*he Department has determined that Hatchery Brook, at the point of discharge, has a watershed of approximately less than one square mile. 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'*". Further, 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". The effects of phosphorus in a receiving water are well known and described in Fact Sheet Section 6d. For river and stream wastewater discharges, the Department typically utilizes a 0.035 mg/L in-stream phosphorus concentration limit (ambient water quality threshold) and the dilution provided in a receiving water to calculate water quality based effluent limits that will provide for attainment of receiving water quality standards and designated uses. The ambient water quality threshold corresponds to the maximum level at which algae blooms will not typically occur under normal circumstances. The Department was able to establish a slightly less stringent water quality based phosphorus concentration limit than in the previous licensing action (0.035 mg/L vs. 0.030 mg/L). The position of MDIFW Gray in the headwater of Hatchery Brook and the resulting ambient to effluent chronic low flow dilution factor of 1:1 prevented establishment of an even less stringent concentration limit. For establishment of a phosphorus mass limit, based on the above factors, the Department must apply the more stringent of the previous license mass limit and a new water quality based mass limit. As the previously established limit of 0.2 kg/day (0.44 lbs/day) was more stringent, it was carried forward in this permitting action. The phosphorus effluent limits in this permitting action are equal to (mass) and slightly less stringent than (concentration) limits in the previous licensing action. The previous licensing action provided a Schedule of Compliance (implementation) for effluent limits for three years from the effective date of the license (July 2000), which was subsequently modified to extend through the life of the license (see Fact Sheet Section 2c). The Department's ability to provide for additional Schedules of Compliance is extremely limited. However, in this permitting action, the Department has modified the previous limits and monitoring requirements from year-round to seasonal in reflection of phosphorus concerns being primarily during summer months.

The position of MDIFW Gray in the headwaters of Hatchery Brook, resulting in a very small watershed and low chronic effluent dilution, is the controlling factor in establishing effluent limits. As with any facility in this situation, the ability to comply with established effluent limitations, operational and monitoring requirements, and to insure attainment of the receiving water's quality standards and designated uses, will depend upon continued and active management of facility operations. Modifications to the permit in this area are not possible.

As the Department and MDIFW have discussed on numerous occasions, introduction of runoff from the MDIFW Maine Wildlife Park and the roadside ditch into MDIFW Gray's in-stream settling pond causes the additional flows and pollutant loads to be included in MDIFW Gray's effluent. These contributions can not be subtracted from the effluent values, as they entail what is discharged through MDIFW Gray's permitted outfall. However, MDIFW Gray's effluent quality may be able to be improved through such measures as providing primary settling or some other means of pre-treatment of those contributions prior to them entering the settling basin. Another possible solution discussed was rerouting those contributions with proper approvals, so that they do not contribute to MDIFW Gray's effluent. As MDIFW Gray pointed out, however, this creates a separate dilemma, as it would cause those discharges to enter Hatchery Brook with no treatment.

Comment 3: Permit Special Condition K; Fact Sheet Section 12, Therapeutic Agents. MDIFW requests to add the use and discharge of two therapeutic agents, calcium carbonate and Chloramine-T, that were not included in its renewal application. MDIFW provided information on the use of these materials, which is summarized in the Department's response.

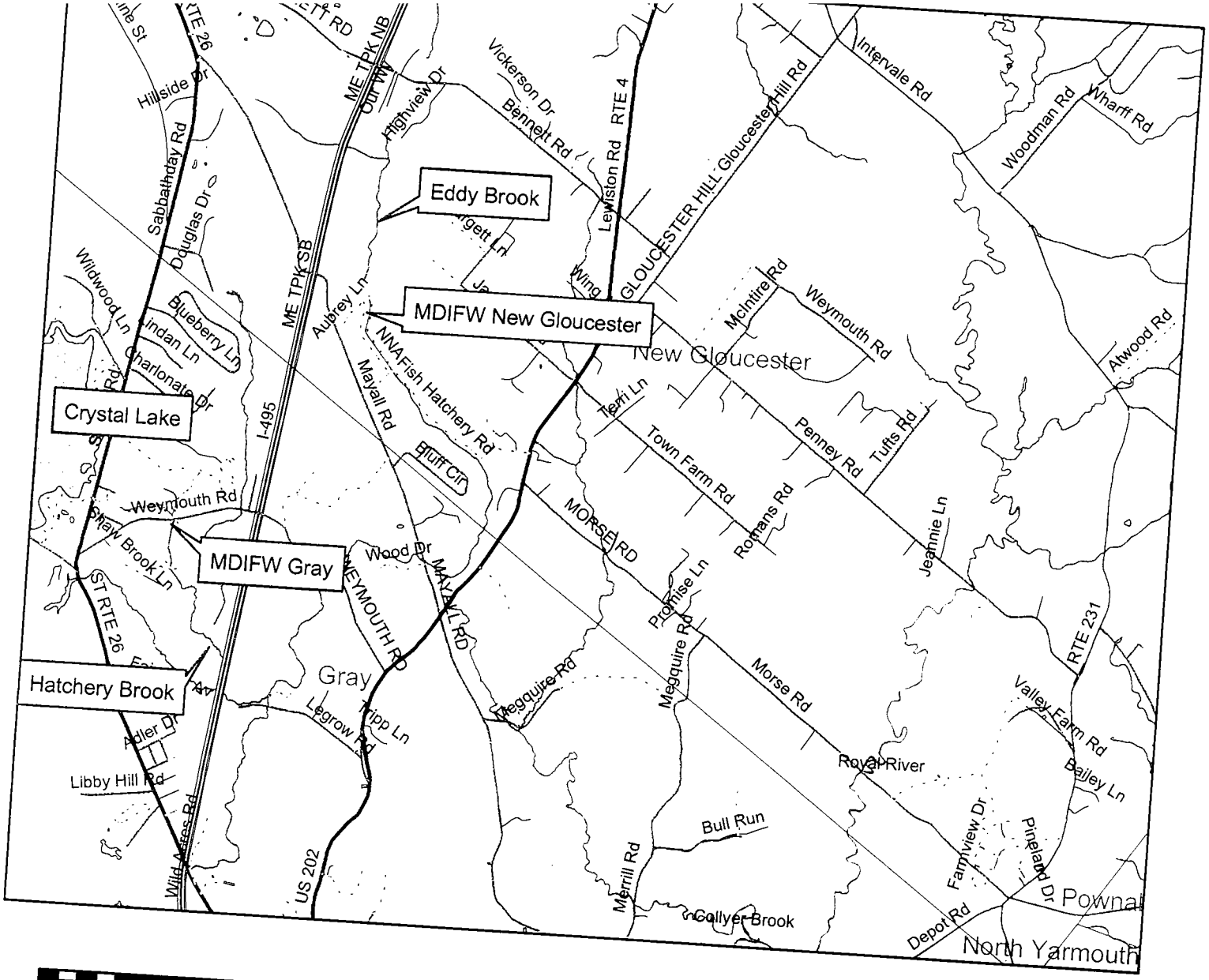
Response 3: The Department provides the following analyses:

MDIFW indicates that it uses small amounts of ground calcium carbonate in the bottom of raceways that house brook trout broodstock to provide for proper fish development by ensuring that calcium levels within the rearing structures approximate those normally found in Maine waters. MDIFW reports that only small amounts are used to provide a thin sand layer in the broodstock pools and that levels are not permitted to exceed the natural range of calcium currently found in Maine waters. In a similar use at its Enfield facility, MDIFW reports applying approximately two pounds of calcium carbonate per week in each of six raceway pools. Residual calcium levels in the MDIFW Gray flow-through water are diluted in the full facility wastewater stream and the 561,000-gallon in-stream settling ponds prior to entering the receiving water. The Department anticipates deminimus levels of calcium discharged and thus is not establishing limitations or monitoring requirements in this permitting action. Instead, use of calcium carbonate shall be consistent with the use and record keeping requirements for therapeutic agents specified in Permit Special Condition K. Fact Sheet Section 12, *Therapeutic Agents*, has been modified accordingly.

MDIFW indicates that it uses Chloramine-T on an intermittent, as-needed basis only for treatment of bacterial gill disease in young fry. MDIFW indicates that Chloramine-T is only used in response to a pathogen outbreak and only under the direction of MDIFW's Fish Pathologist. Based on this information, the Department considers the potential use of Chloramine-T to be adequately addressed through, and requires that MDIFW adhere to, the provisions of Permit Special Conditions J, *Disease and Pathogen Control and Reporting*, and K, *Therapeutic Agents*. No modifications of the Permit are necessary at this time.

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

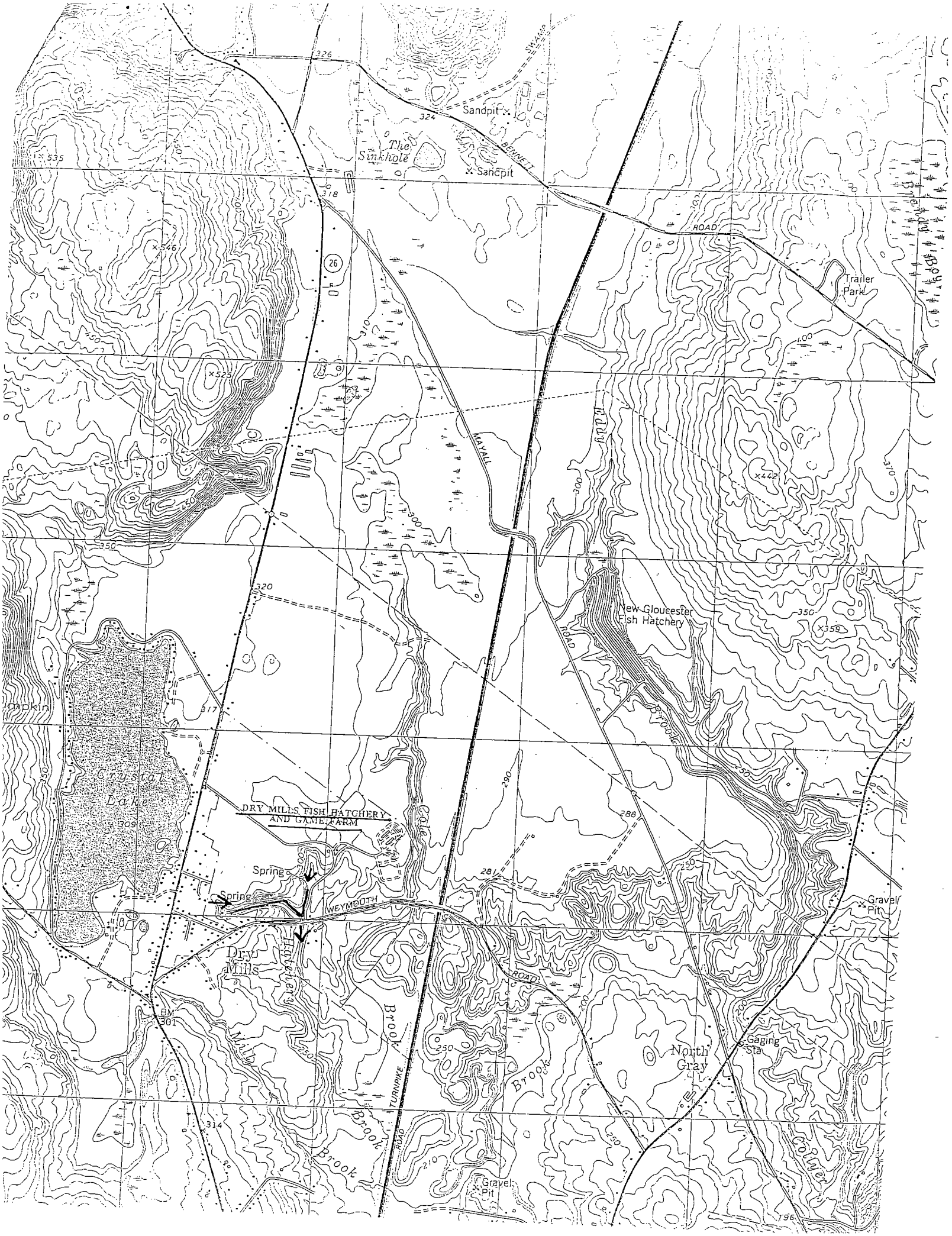
N

0 0.2 0.4 0.8 1.2 1.6 Miles

MDIFW Dry Mills Fish Hatchery
Gray, Maine

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

DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF MAINE



Sandpit
The Sinkhole
Sandpit
BENNETT
ROAD
Trailer Park
26
MAYALL
Eddy
New Gloucester Fish Hatchery
ROAD
Brook
Crystal Lake
DRY MILLS FISH HATCHERY AND GAME FARM
Cole
Spring
Spring
WEYMOUTH
Dry Mills
Hatchery
Mill
Brook
TURNPIKE
ROAD
Brook
Brook
Brook
North Gray
Gaging Sta
Gravel Pit
Gravel Pit
Coilyer
BM 301

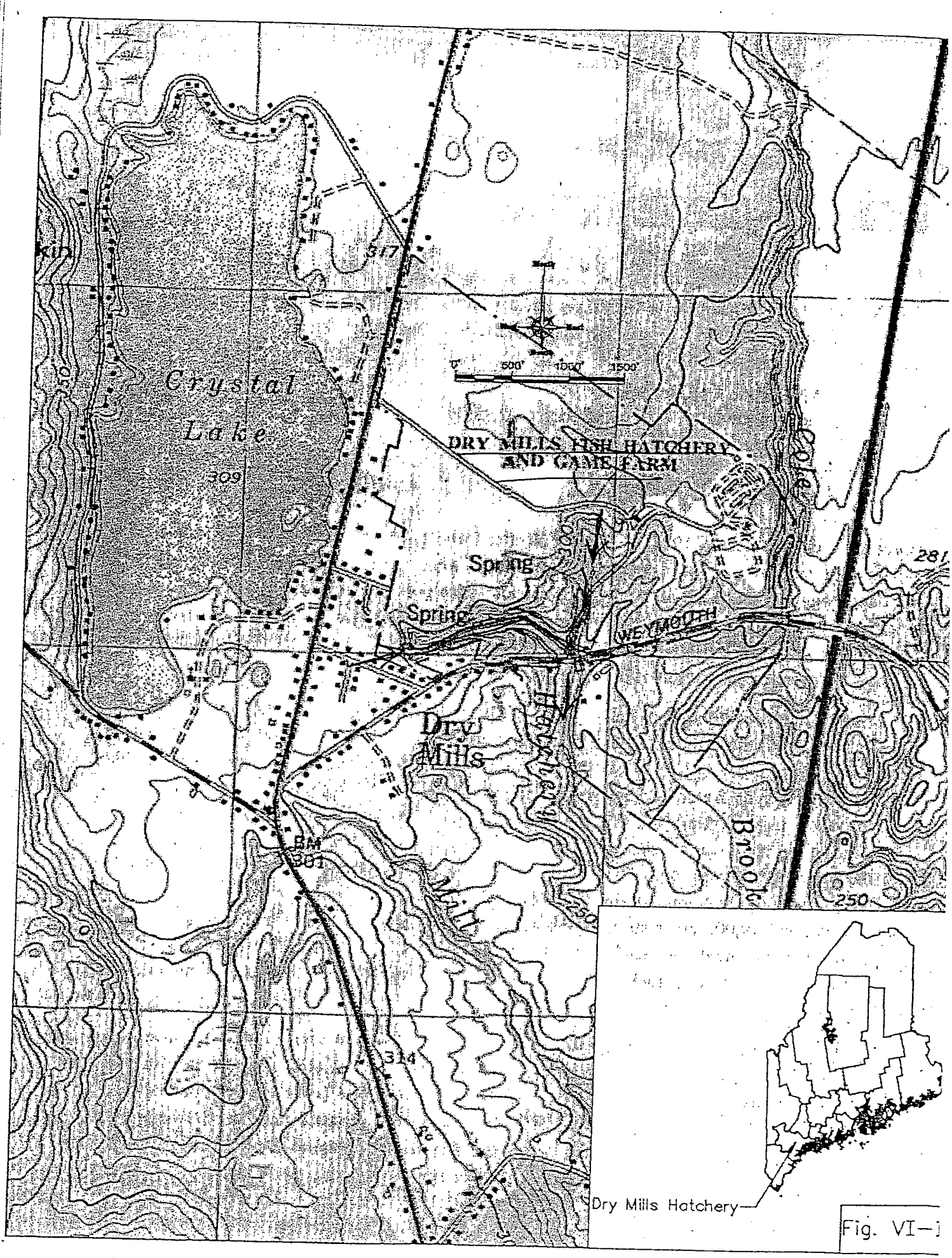
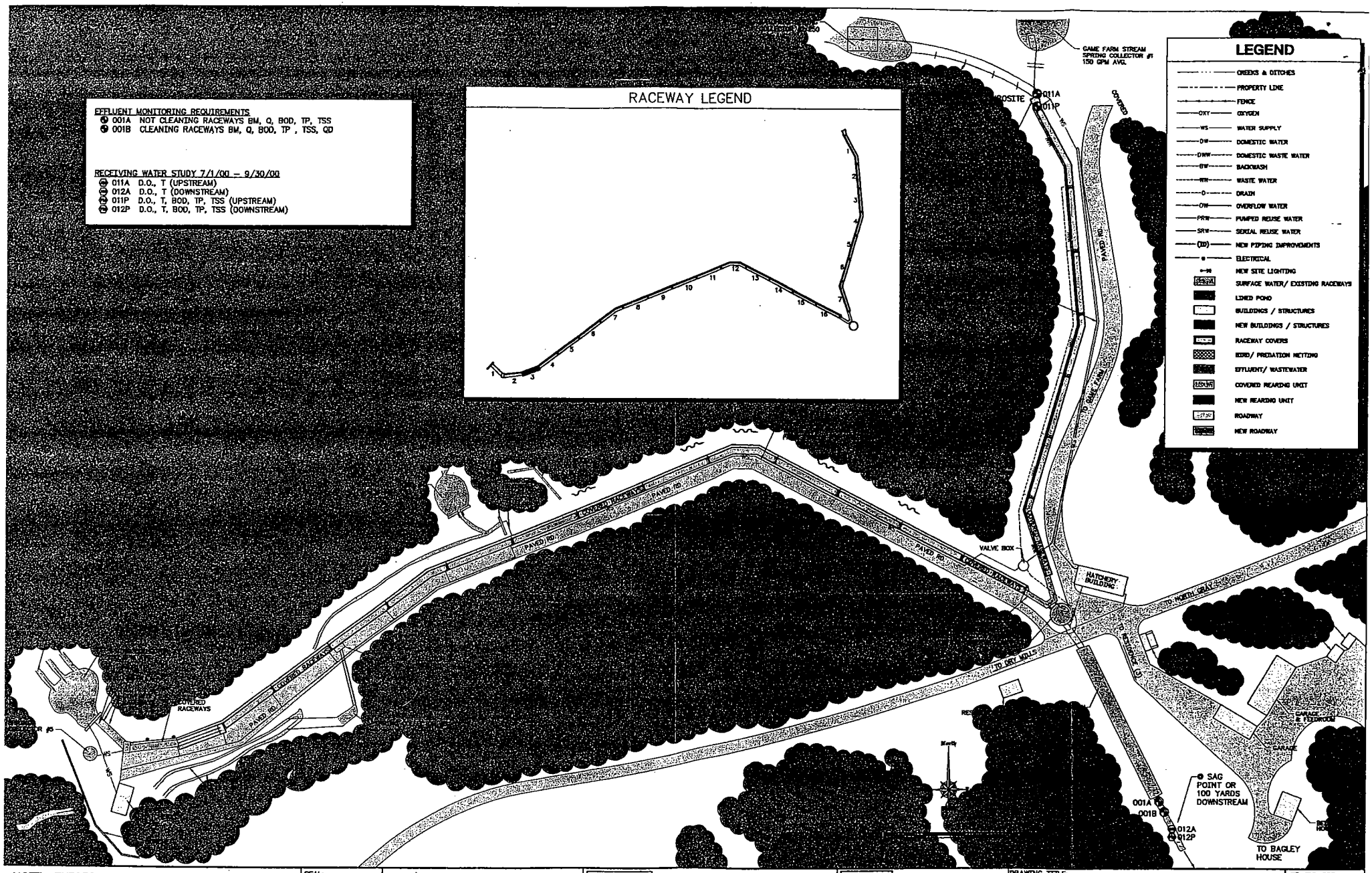

Crystal
Lake
309
317
DRY MILLS FISH HATCHERY
AND GAME FARM
Spring
Spring
WEYMOUTH
Dry
Mills
Hatchery
Brook
Mill
BM
301
314
250
281
0'
500'
1000'
1500'
Dry Mills Hatchery

Fig. VI-1

ATTACHMENT B

(Facility Site Plans)



NOTE: EXISTING CONDITIONS DRAWINGS WERE GENERATED USING AERIAL PHOTOGRAPHY FOR GRAPHICAL PRESENTATION PURPOSES ONLY. DRAWINGS SHOULD NOT BE USED FOR SCALED ENGINEERING DESIGN.

SEAL:

FISHPRO
Consulting Engineers and Scientists
5201 South Sixth Street Road, Springfield, Il 62703-5143, (217) 585-8533
Fort Orchard, Wa. Portland, Or.

STATE OF MAINE
DEPARTMENT OF INLAND FISHERIES AND WILDLIFE

STATE OF MAINE

DRAWING TITLE: DRY MILLS EXISTING CONDITIONS

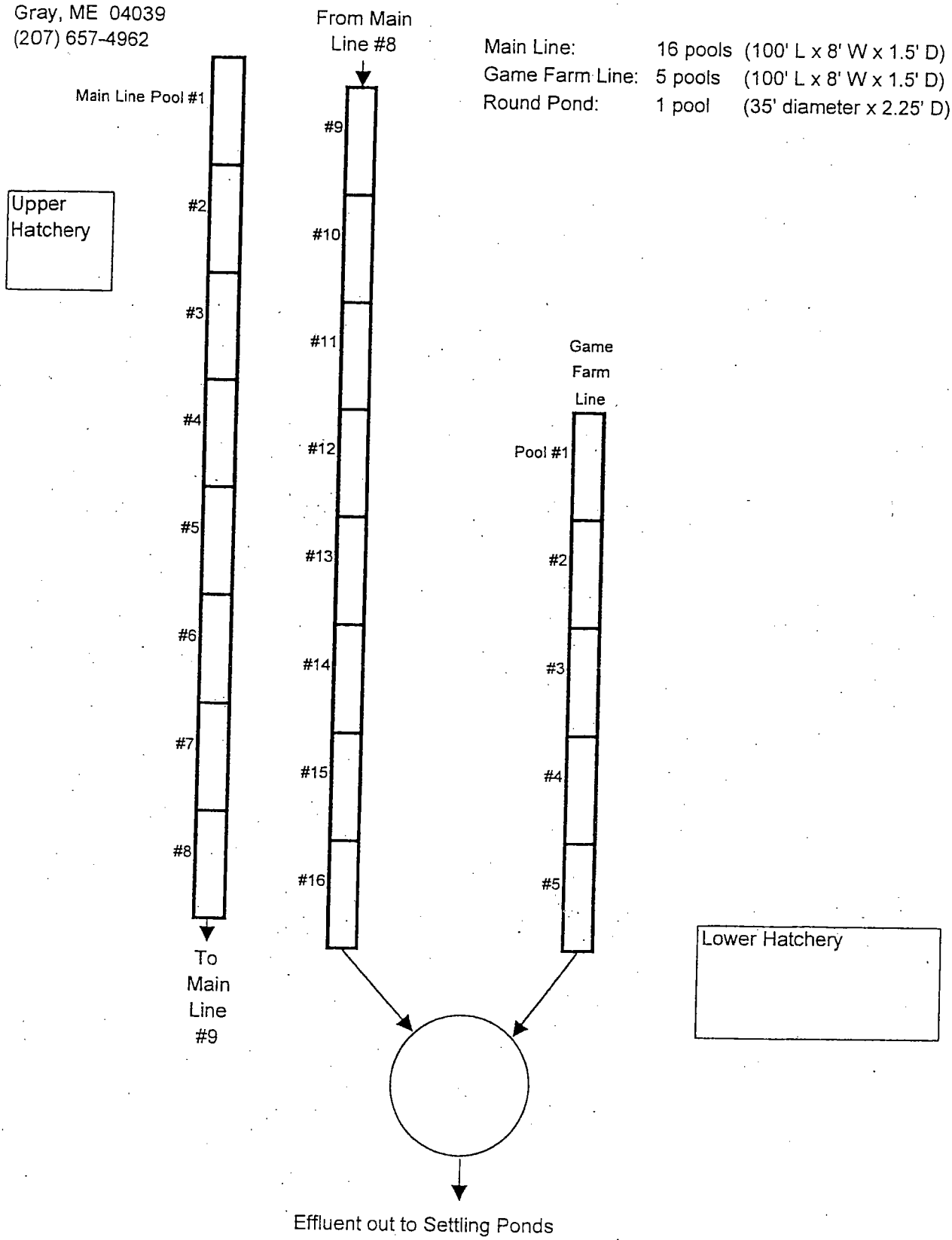
PROJECT: MAINE COMPREHENSIVE STATEWIDE FISH HATCHERY SYSTEM ENGINEERING STUDY

FP #00-095
DATE: MAR. 2002
SHEET: C-DM-4
OF 2 SHEETS

#9

Dry Mills State Fish Hatchery
158 Weymouth Road
Gray, ME 04039
(207) 657-4962

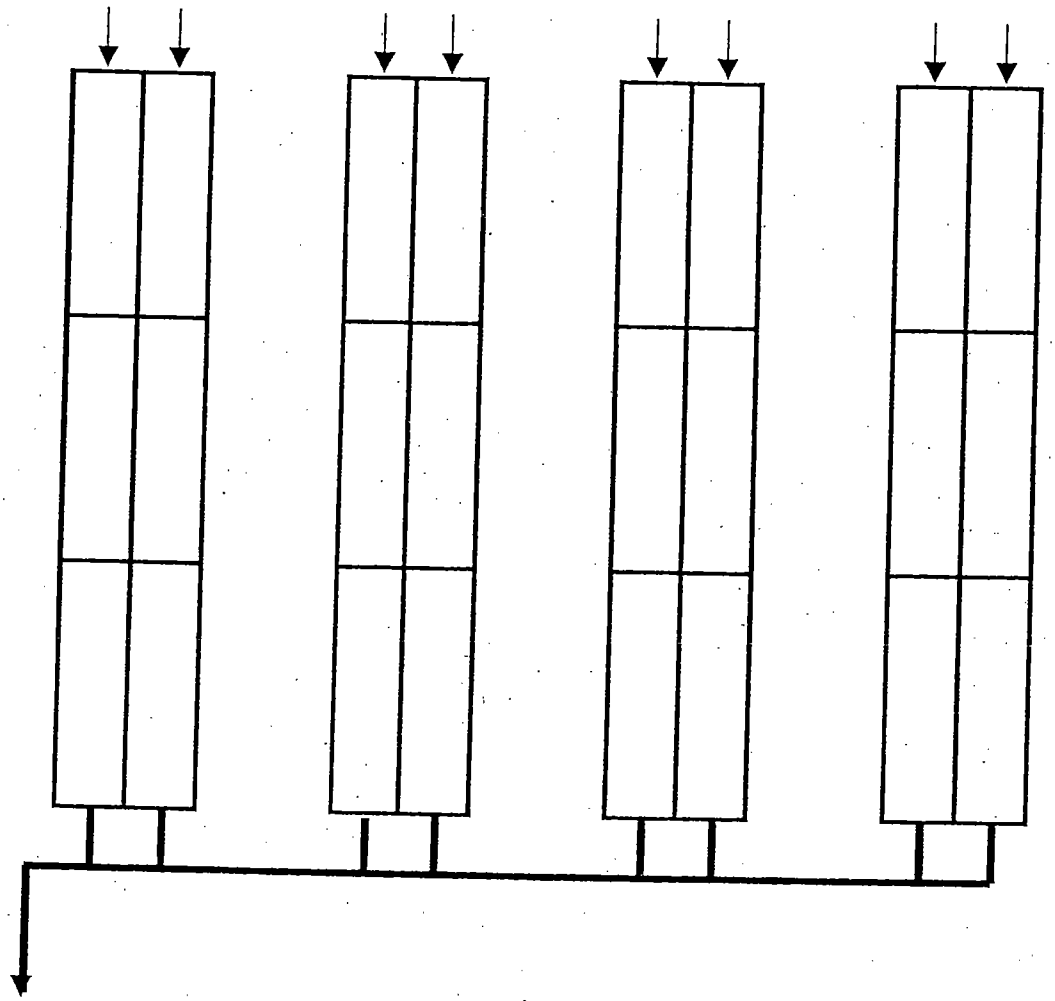
Main Line:	16 pools	(100' L x 8' W x 1.5' D)
Game Farm Line:	5 pools	(100' L x 8' W x 1.5' D)
Round Pond:	1 pool	(35' diameter x 2.25' D)



#9

Dry Mills State Fish Hatchery
158 Weymouth Road
Gray, ME 04039
(207) 657-4962

Dry Mills Upper Hatchery
24 troughs (120" L x 13.5" W x 7.5" D)

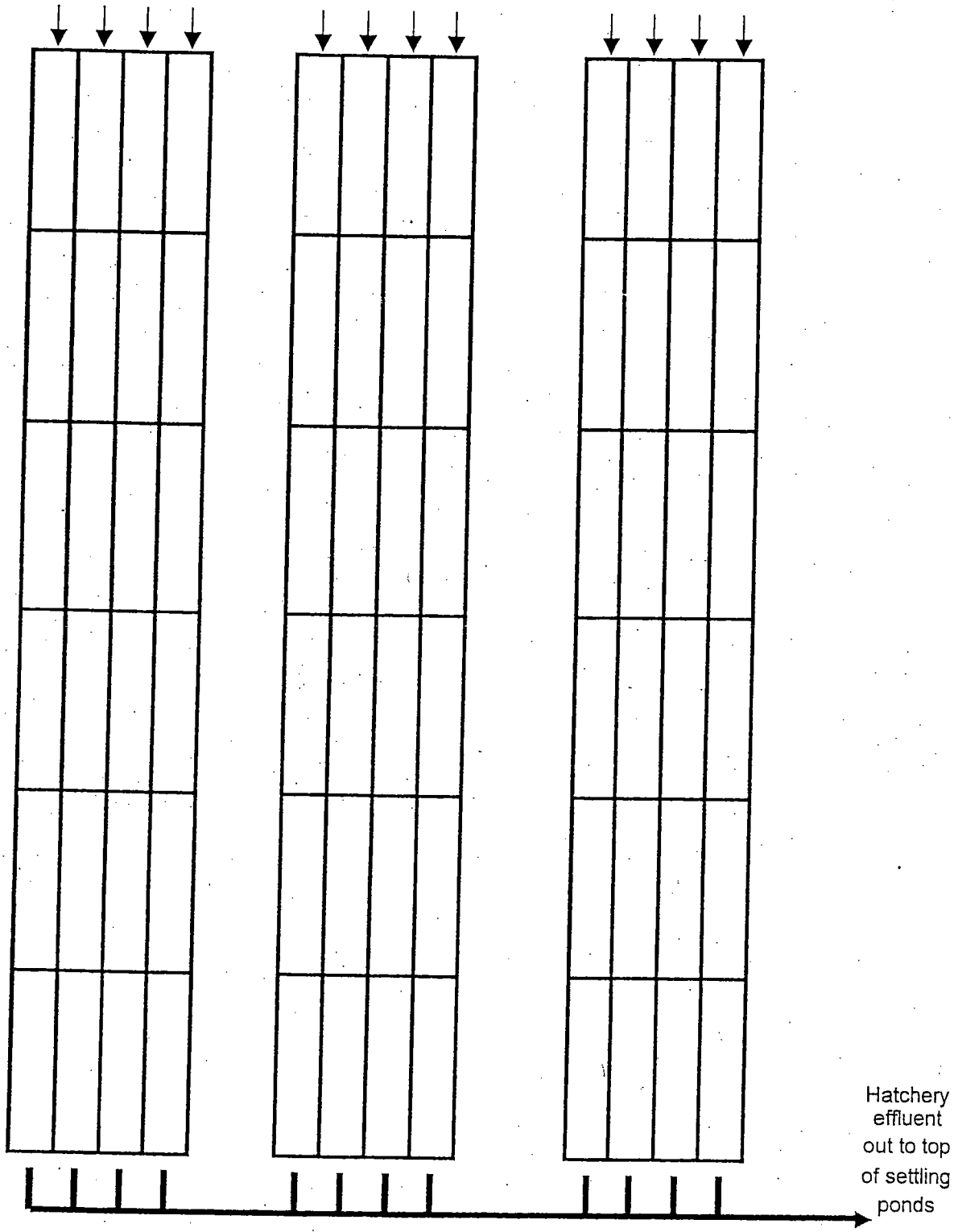


Hatchery effluent out to top of settling ponds

#9

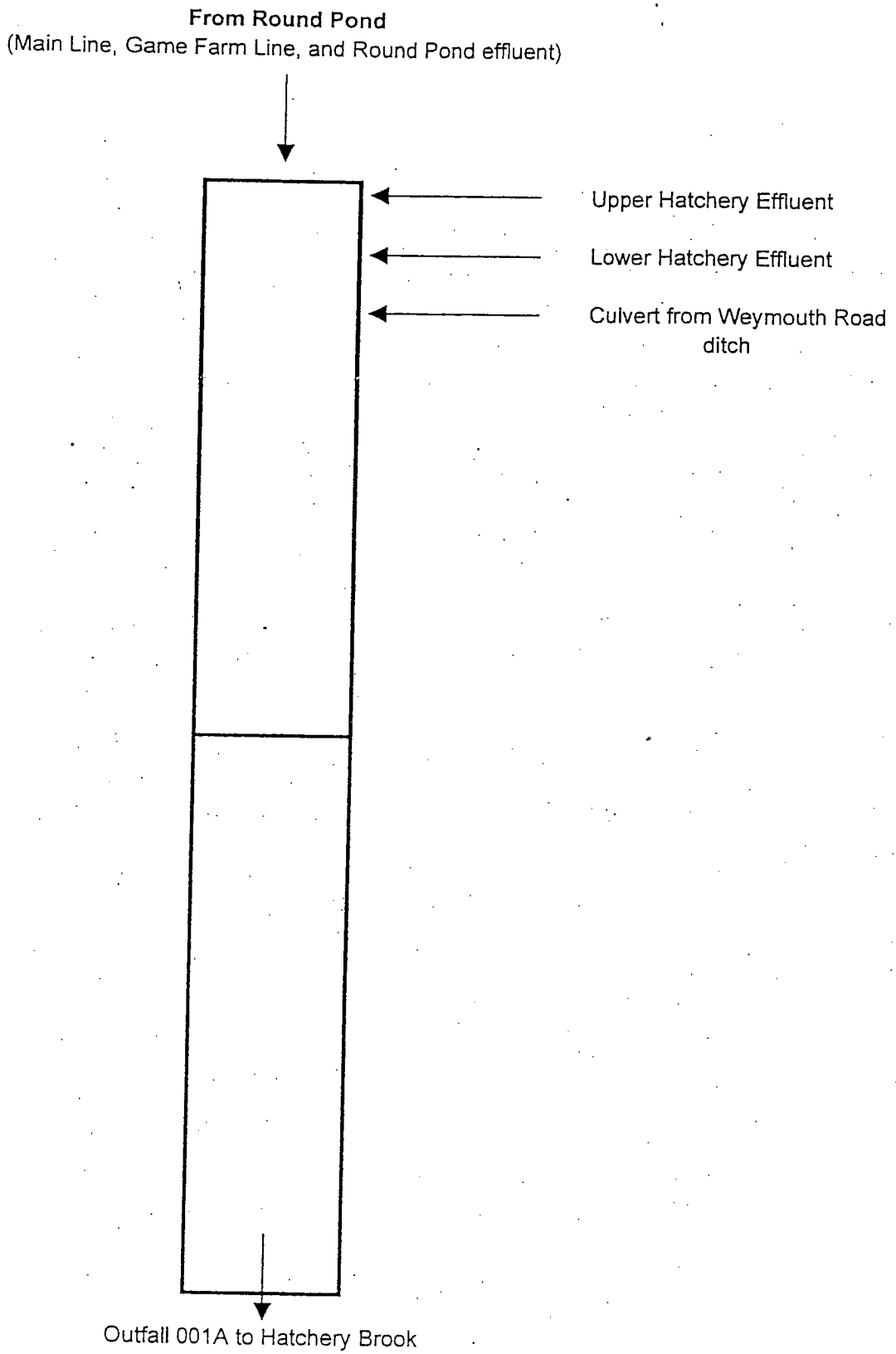
Dry Mills State Fish Hatchery
158 Weymouth Road
Gray, ME 04039
(207) 657-4962

Dry Mills Lower Hatchery
72 troughs (120" L x 13.5" W x 7.5" D)



#9

Dry Mills State Fish Hatchery
Effluent Settling Ponds & Outfall Location



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.