STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAWN R. GALLAGHER
COMMISSIONER

October 19, 2005

Mr. Tom Philbrick
Dunham's Pure Water Hatchery
60 Mt. Blue Pond Road
Avon, Maine 04966

P.O.Box 817
Rangeley, Maine 04970

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0110469
Maine Waste Discharge License (WDL) Application # W-008150-5Q-A-N
Final Permit/License

Dear Mr. Philbrick:

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 Resource Regulation
Bureau of Land and Water Quality

Enc./cc: Beth DeHaas (MEDEP); D[redacted]

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

DEPARTMENT ORDER

IN THE MATTER OF

DUNHAM'S PURE WATER HATCHERY	)	MAINE POLLUTANT DISCHARGE
AVON, FRANKLIN COUNTY, MAINE	)	ELIMINATION SYSTEM PERMIT
FISH HATCHERY	)	AND
#ME0110469	)	WASTE DISCHARGE LICENSE
#W-008150-5Q-A-N **APPROVAL**	)	**NEW**

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 DUNHAM'S PURE WATER HATCHERY (hereinafter Dunham's), 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 Maine Pollutant Discharge Elimination System (MEPDES) Permit and Maine Waste Discharge License (WDL) for the discharge of a monthly average of 0.5 million gallons per day (MGD) of fish hatchery wastewater to an unnamed stream, Class B, and tributary to the Sandy River, from a commercial Brook trout and Rainbow trout hatchery and rearing facility in Avon, Maine. The facility has been assigned MEPDES Permit number #ME0110469 and Maine WDL number #W-008150-5Q-A-N.

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 #ME0110469 will be utilized as the primary reference number for the Avon facility.

This permitting action establishes the following:

1. a monthly average discharge flow limit of 0.5 MGD;
2. a schedule of compliance for installation of an accurate flow measuring device and commencement of flow measurement;
3. BOD and TSS monthly average and daily maximum mass and 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;
4. seasonal total phosphorus monthly average and daily maximum mass and concentration monitoring and reporting requirements with implementation of monthly average water quality based mass and concentration limits in three years;
5. seasonal orthophosphate monthly average and daily maximum monitoring and reporting requirements for one year;
6. monthly average and daily maximum reporting requirements for mass of fish on hand;
7. daily maximum best practicable treatment based mass and concentration limits for formalin;
8. monthly average mass and concentration reporting requirements for formalin;
9. seasonal monthly average and daily maximum concentration monitoring and reporting requirements and a daily minimum concentration limit for effluent dissolved oxygen;
10. a pH limit of 6.0-8.5 standard units.
11. minimum monitoring frequency and sample type requirements based on Department best professional judgement (BPJ);
12. a requirement for a current facility Operation and Maintenance Plan;
13. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
14. requirements for settling and fish pond cleaning;
15. a requirement for compliance with existing state salmonid fish health rules;
16. requirements related to proper use and record keeping of therapeutic agents;
17. record keeping requirements for disinfecting/sanitizing agents;
18. Department BPJ derived minimum treatment technology requirements for the Avon facility, and;
19. requirements for ambient dissolved oxygen and temperature monitoring studies.

CONCLUSIONS

BASED on the findings in the attached Fact Sheet dated September 13, 2005 and revised October 14, 2005, 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 reasonable alternatives available.

ACTION

THEREFORE, the Department APPROVES the above noted application of DUNHAM'S PURE WATER HATCHERY to discharge fish hatchery wastewater consisting of a monthly average flow of 0.5 MGD to an unnamed stream, Class B, and tributary to the Sandy River, 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 18TH DAY OF October, 2005.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
Dawn R. Gallagher, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: March 16, 2001
Date of application acceptance: March 19, 2001

FILED
OCT 18 2005
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
W-008150-5Q-A-N / # ME0110469 October 14, 2005

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge **fish hatchery wastewater from Outfall #001A** to an unnamed stream and tributary to the Sandy River. 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[2] *[50050]*	0.5 MGD *[03]*	---	---	---	---	Daily *[01/01]*	Measured *[MS]*
BOD[3] *[00310]*	25 lbs/day *[26]*	42 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	---	Once/2 weeks *[01/14]*	Composite[4] *[CP]*
TSS[3] *[00530]*	25 lbs/day *[26]*	42 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	---	Once/2 weeks *[01/14]*	Composite[4] *[CP]*
Total Phosphorus[5] **From June 1 - Sept 30** *[00665]*	report lbs/day *[26]*	report lbs/day *[26]*	report mg/L *[19]*	report mg/L *[19]*	---	Once/2 weeks *[01/14]*	Composite[4] *[CP]*
Total Phosphorus[5] **From June 1 - Sept 30 beginning 2008** *[00665]*	0.15 lbs/day *[26]*	report lbs/day *[26]*	0.04 mg/L *[19]*	report mg/L *[19]*	---	Once/2 weeks *[01/14]*	Composite[4] *[CP]*
Orthophosphate (as P)[5] **From 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[4] *[CP]*
Fish on Hand *[45604]*	report lbs/day *[26]*	report lbs/day *[26]*	---	---	---	Once/2 weeks *[01/14]*	Calculated *[CA]*
Formalin[6] *[51064]*	report lbs/day *[26]*	1.1 lbs/day *[26]*	report mg/L *[19]*	0.31 mg/L *[19]*	---	Once/2 weeks *[01/14]*	Calculated *[CA]*
Dissolved Oxygen[7] **From June 1 – Sept 30** *[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. During the period beginning the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge **fish hatchery wastewater from Outfall #001A** to an unnamed stream and tributary to the Sandy River. 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
Dissolved Oxygen[7] Ambient Location 1 In natural stream adjacent to fish pond **From June 1 – Sept 30** *[00300]*	---	---	Report mg/L *[19]*	Report mg/L *[19]*	Report mg/L *[19]*	1/week *[01/07]*	Measured *[MS]*
Water Temperature[7] 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[7, 8] Ambient Location 1 *[80273]*	---	---	---	Report 24-hour time *[1Q]*	---	1/week *[01/07]*	Measured *[MS]*
Dissolved Oxygen[7] Ambient Location 2 At confluence of natural stream and fish pond outlet stream **From June 1 – Sept 30** *[00300]*	---	---	Report mg/L *[19]*	Report mg/L *[19]*	Report mg/L *[19]*	1/week *[01/07]*	Measured *[MS]*
Water Temperature[7] Ambient Location 2 *[00010]*	---	---	Report Degrees Celsius *[04]*	Report Degrees Celsius *[04]*	Report Degrees Celsius *[04]*	1/week *[01/07]*	Measured *[MS]*
Time of Day[7, 8] Ambient Location 2 *[80273]*	---	---	---	Report 24-hour time *[1Q]*	---	1/week *[01/07]*	Measured *[MS]*

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 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 #001A, the outlet of the fee fishing pond, 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. Flow: The monthly average effluent flow limitation is designed to address typical facility discharges during spring high flow periods. Pursuant to Permit Special Condition G, by January 1, 2006, the permittee shall install and have calibrated an accurate effluent flow measuring device at the fee fishing pond outlet. From the effective date of this permit until the flow measuring device is operational or January 1, 2006, whichever occurs sooner, effluent flow may be estimated. Following this event, flow shall be measured.

3. BOD and TSS: BOD and TSS effluent concentration and mass limits are based on results of secondary level fish hatchery wastewater treatment, developed by USEPA. 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.

4. Composite Samples: Composite sample means a sample consisting of a minimum of four grab samples collected at two-hour intervals during the working day at the facility. Alternatively, upon Department approval, the permittee may elect to use an automatic compositer for sampling.

5. 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).

SPECIAL CONDITIONS
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS, FOOTNOTES (cont'd)

6. 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 17 for sample calculations.

7. 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 N.

8. 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 #001A. Discharges of wastewater from any other point source are not authorized under this permit, and shall be reported in accordance with Standard Condition B(5)(*Bypass*) of this permit.

SPECIAL CONDITIONS

D. NOTIFICATION REQUIREMENT

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

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

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

   a. The quality or quantity of waste water 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 7), and N, shall be submitted to the following address:

Department of Environmental Protection
Bureau of Land and Water Quality
17 State House Station
Augusta, Maine 04333-0017

F. OPERATION & MAINTENANCE (O&M) PLAN

On or before May 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.

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

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

By December 31 of each year, or within 90 days of any process changes or minor equipment upgrades, the permittee shall evaluate and modify the O&M Plan including site plan(s) and schematic(s) for the waste water 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 shall adhere to the specific required tasks and deadlines detailed below:

1. **Flow Measurement: On or before January 1, 2006,** the permittee shall install and have calibrated an accurate effluent flow measuring device at the fee fishing pond outlet. *[51799]* From the effective date of this permit until the flow measuring device is operational or January 1, 2006, whichever occurs sooner, effluent flow may be estimated. Following this event, flow shall be measured. *[81899]*

2. **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 water quality based limits (total phosphorus) **on or before June 1, 2008.** *[01103]*

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

A. **On or before June 1, 2006 and 2007**, the permittee shall submit to the Department for review, facility wide plans (reports) to address operational and physical modifications necessary to ensure compliance with the total phosphorus limits established in this permit ***[90199,90299]***. The plans shall encompass methods, technologies, and implementation schedules for attainment of the total phosphorus limits. For any alternatives involving design and construction, see Fact Sheet Attachment C for Department guidance on developing an Engineer's Facilities Planning Report.

H. ALTERNATIVE DISCHARGE STUDY:

On or before six-months prior to expiration of this permit, Dunham's is required to submit to the Department for review, an Alternative Discharge Study (ADS) report for the Avon 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 8. *[34099]*

I. SETTLING AND FISH POND CLEANING

Settling tanks/ponds and fish ponds shall be cleaned when accumulated materials occupy 20% of any pond's capacity, when material deposition in any area of the ponds exceeds 50% of the operational depth, or at any time that solids from the ponds 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

Dunham's 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.

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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:

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 Avon facility shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, and removal of solids. Dunham's 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 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 Dunham facility'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 the unnamed tributary to the Sandy River. 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 at two locations, the first in the natural stream adjacent to the fish pond and the second at the confluence of the natural stream and the fish pond outlet stream, unless revised by the Department. **On or before three months following the effective date of this permit**, Dunham's 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.

O. REOPENING OF PERMIT FOR MODIFICATIONS

Upon evaluation of the tests results or monitoring requirements specified in Special Conditions of this permitting action, new site specific information, 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.

P. SEVERABILITY

In the event that any provision, or part thereof, of this permit is declared to be unlawful by a reviewing court, the remainder of the permit shall remain in full force and effect, and shall be construed and enforced in all respects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
AND
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: September 13, 2005
Revised: October 14, 2005

MEPDES PERMIT NUMBER: #ME0110469
WASTE DISCHARGE LICENSE: # W-008150-5Q-A-N

NAME AND ADDRESS OF APPLICANT:

DUNHAM'S PURE WATER HATCHERY
60 Mt. Blue Pond Road
Avon, Maine 04966

COUNTY: FRANKLIN

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

DUNHAM'S PURE WATER HATCHERY
60 Mt. Blue Pond Road
Avon, Maine 04966

RECEIVING WATER / CLASSIFICATION: Unnamed Tributary to Sandy River / Class B

COGNIZANT OFFICIAL AND TELEPHONE NUMBER:

Mr. Tom Philbrick (207) 864-2154
facility: (207) 639-2815

1. APPLICATION SUMMARY

The applicant has applied for a Maine Pollutant Discharge Elimination System (MEPDES) Permit and Maine Waste Discharge License (WDL) for the discharge of a monthly average of 0.5 million gallons per day (MGD) of fish hatchery wastewater to an unnamed stream, Class B, and tributary to the Sandy River, from a commercial Brook trout and Rainbow trout hatchery and rearing facility in Avon, Maine. The facility has been assigned MEPDES Permit number #ME0110469 and Maine WDL number #W-008150-5Q-A-N.

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 #ME0110469 will be utilized as the primary reference number for the Avon facility.

b. Terms and conditions – This permitting action establishes the following:

1. a monthly average discharge flow limit of 0.5 MGD;
2. a schedule of compliance for installation of an accurate flow measuring device and commencement of flow measurement;
3. BOD and TSS monthly average and daily maximum mass and 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;
4. seasonal total phosphorus monthly average and daily maximum mass and concentration monitoring and reporting requirements with implementation of monthly average water quality based mass and concentration limits in three years;
5. seasonal orthophosphate monthly average and daily maximum monitoring and reporting requirements for one year;
6. monthly average and daily maximum reporting requirements for mass of fish on hand;
7. daily maximum best practicable treatment based mass and concentration limits for formalin;
8. monthly average mass and concentration reporting requirements for formalin;
9. seasonal monthly average and daily maximum concentration monitoring and reporting requirements and a daily minimum concentration limit for effluent dissolved oxygen;
10. a pH limit of 6.0-8.5 standard units.
11. minimum monitoring frequency and sample type requirements based on Department best professional judgement (BPJ);
12. a requirement for a current facility Operation and Maintenance Plan;
13. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
14. requirements for settling and fish pond cleaning;
15. a requirement for compliance with existing state salmonid fish health rules;
16. requirements related to proper use and record keeping of therapeutic agents;
17. record keeping requirements for disinfecting/sanitizing agents;
18. Department BPJ derived minimum treatment technology requirements for the Avon facility and;
19. requirements for ambient dissolved oxygen and temperature monitoring studies.

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

March 16, 2001 – The Department received a WDL/MEPDES Permit application from Dunham's Pure Water Hatchery for the discharge of a monthly average of 0.08 mgd of fish hatchery wastewater to an unnamed stream and tributary of the Sandy River in Avon. The application was assigned WDL #W-008150-5Q-A-N and MEPDES Permit #ME0110469. The requested flow value considered only one component of the facility's discharge and thus was modified to 0.5 mgd in 2005 as described in this permitting action.

d. Source Description/ Facility Operation:

Dunham's Pure Water Hatchery is a commercial fish hatchery and rearing facility that raises Brook trout and Rainbow trout for private fish ponds and also maintains a fishing-for-fee pond on site. Dunham's was established in the 1980s as a hatchery and retail seafood business and was purchased by the current owner in July 2004. Facility site plans are included as Fact Sheet Attachment B. Dunham's plans to significantly rebuild and upgrade the facility in the near future.

Influent Water: Dunham's receives its source water from two wells located on site with a combined yield of 55 gallons per minute (gpm). The wells are located adjacent to the seafood business and the fee fishing pond. Dunham's intends to install 1-2 new additional wells in the future. Source well water is conducted from the wells to the facility via garden hose and throughout the facility via 1-2 inch diameter plastic and PVC piping by a combination of gravity flow, pumping, and partial recirculation. Dunham's also receives water flows to its fee fishing pond from a historically partially diverted stream channel, from surface runoff, and from groundwater.

Hatchery Operation: Dunham's purchases "eyed" Kennebago strain Brook trout eggs from the Maine Department of Inland Fisheries and Wildlife's Phillips fish hatchery annually in the fall. Dunham's obtains and fertilizes Rainbow trout eggs from fish kept in its fee fishing pond annually in the spring. Eggs are incubated in two layers within three, 18-inch wide by 20-foot long egg troughs operated in series flow. The egg troughs discharge a combined flow of 5 gpm. Because of differences in their natural spawning times, Brook trout eggs are incubated in the fall and winter, while Rainbow trout eggs are incubated in the spring and early summer.

Rearing and Holding Operation: Dunham's currently operates rearing structures both inside the facility barn as well as outside. Structures are located as follows:

Barn first floor: On the first floor of the barn are located three, 6-foot diameter by 1.5-foot deep (300-gallon) circular fiberglass tanks, one 4-foot by 6-foot by 8-inch deep (120-gallons) rectangular fiberglass tank, and one 4-foot by 8-foot by 8-inch deep (160-gallons) rectangular fiberglass tank, for Rainbow trout fry. Fish are kept in these tanks until they are approximately 1.5 years old, then they are moved to outside tanks in the fall.

Also on the first floor are located one, 6-foot diameter by 3-foot deep (600 gallons) and two, 8-foot diameter by 3-foot deep (1,100 gallons) circular fiberglass tanks used to hold fish for customer orders.

Barn second floor: On the second floor of the barn are located six, 6-foot diameter by 1.5-feet deep (300-gallons) vinyl / plastic circular pools for both Rainbow trout and Brook trout fry. Fish are kept in these pools until they are approximately 1.5 years old, then they are moved to outside tanks in the fall for Rainbow trout and spring for Brook trout.

Dunham's uses fresh well water for the egg troughs, the first floor fry rearing tanks, and a portion of the flow for the second floor fry rearing pools. Flow through water from these structures is then reused for the remaining second floor fry rearing pool and first floor fish holding tank water needs.

Outside: Outside the barn on the facility property are located one, 10-foot diameter by 2-foot deep (1,100-gallons) and three, 12-foot diameter by 2-foot deep (1,700-gallons) vinyl/plastic circular pools. Source water for these pools is provided by well water and the pools are operated in series. Three of these pools are used for grow-out and holding of fish until they are purchased, then the fish are moved to the inside holding tanks until delivery to customers. One of the 12-foot diameter pools (the third in series) is currently used for wastewater settling and does not contain fish.

Also outside, located near their retail seafood building, are two, 14-foot diameter by 2-foot deep (2,300-gallons) circular fiberglass tanks, used for grow-out and housing large fish for sale, and one, 10-foot diameter by 1.5-foot deep (900-gallons) circular vinyl/plastic pool, used solely for temporary holding of Rainbow trout broodstock. Source water for the tanks consists of both well water and surface water from the nearby brook. Flow through water from the two large tanks goes to the broodstock tank, then to Dunham's fee fishing pond.

Dunham's also maintains an approximately 0.2 acre, 125-foot by 70-foot by 6-foot deep (400,000-gallon) earthen pond which contains Rainbow trout for fee fishing, and thus holds numerous large adult fish. All facility flow-through wastewater flows to the fee fishing pond. The fee fishing pond is also fed by a historical partial diversion of a nearby unnamed stream, from surface runoff, and from groundwater. The fee fishing pond has two 12-inch diameter culvert outlet pipes whose channels combine within 10-feet of the pond. The pond outlet flows through an approximately 300-foot long channel to rejoin the natural unnamed stream, which is a tributary to the Sandy River. As the fee fishing pond is fed by a diversion of the unnamed stream, the Department considers the pond outlet channel to be part of the unnamed stream and the facility receiving water. Water from the fee fishing pond also seeps through the earthen berm to adjacent natural sections of the unnamed stream. Adjacent to the pond, the stream is approximately 12-feet across, up to 1-foot deep, and consists of riffle and pool habitat.

Dunham's was recently purchased and is currently developing its future business and site infrastructure plans. Prior to the purchase, Dunham's reported maintaining biomass on site consisting of 200-pounds of broodstock fish (40 fish), 1.5 pounds (more likely 15 lbs) of first

year fish (15,000 fish), and 3,125 pounds of second year fish (25,000 fish). Dunham's reports that its peak feeding periods occur from mid-March through May and from mid-September through November.

e. Wastewater Treatment

Dunham's reports that it cleans fish pools and tanks twice daily with solids removed by vacuum for eventual disposal offsite. Wastewater from flow-through and during vacuum cleaning operations from all interior pools and tanks is routed to a 6-foot diameter by 3-foot deep (600 gallons) circular fiberglass settling tank on the first floor of the barn, then to a 10-foot diameter by 2-foot deep (1,100-gallons) circular vinyl / plastic pool outside used for wastewater settling. Settled solid materials are removed from the settling tank and settling pool periodically by vacuuming for eventual disposal offsite. Wastewater supernatant / flow-through wastewater flows to Dunham's fee fishing pond. Outside fish pools and tanks and the outside wastewater settling pool are also cleaned through vacuuming for eventual disposal offsite. As with the inside structures, wastewater supernatant / flow-through wastewater from the outside structures flows to Dunham's fee fishing pond. Previously, Dunham's discharged its solid fish waste materials to the ground surface on site, which appears to have caused and/or contributed to previously observed impacts to receiving water quality.

Dunham's has effluent screens at the outlets of the hatchery troughs, fry rearing pools and tanks, grow-out and holding pools and tanks, wastewater settling pools and tank, and the fee fishing pond to prevent the escapement of fish. The screens are sized according to the size of the fish. 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 467.4.G(2) classifies the unnamed stream and tributary to the Sandy River 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.

According to the Department's calculations, the unnamed stream to which Dunham's discharges its wastewater has a watershed of 1.47 square miles. Maine Law, 38 M.R.S.A., Section 464.4.A(1) states, "*the department may not issue a water discharge license for*...(the) *direct discharge of pollutants to waters having a drainage area of less than 10 square miles, except that discharges into these waters that were licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist*". Maine Law, 38 M.R.S.A., Section 464.12 states, "*An unlicensed discharge from a fish hatchery is considered, and continues to be considered after it is licensed...the same as a discharge licensed prior to January 1, 1986...if...:*

A. *The discharge was in existence prior to January 1, 1986;*
B. *The fish hatchery is licensed to cultivate fish by the Department of Inland Fisheries and Wildlife on the effective date of this subsection* (August 11, 2000)*; and*
C. *An application from the hatchery for a waste discharge license is accepted as complete for processing by the Department of Environmental Protection within 90 days of notification that a waste discharge license if required...*".

The Department notified Dunham's of its need to obtain a WDL by letter dated December 20, 2000. The Department received Dunham's WDL application on March 16, 2001 and accepted it for processing on March 19, 2001. The Department finds that Dunham's has complied with the provisions above and that its discharge may be treated the same as a discharge licensed prior to January 1, 1986, pursuant to 38 M.R.S.A., Section 464.12.

It should be noted that Dunham's use of surface water from its historical partial diversion of the unnamed stream described in Fact Sheet Section 2d shall at no time result in a complete or substantial dewatering of the stream, as this would cause a violation of Class B water standards (38 M.R.S.A., §465.3). Further, the Department is undertaking rulemaking pursuant to 38 M.R.S.A., §470-E, to address water withdrawals, which may impact Dunham's operation in the future.

5. RECEIVING WATER QUALITY CONDITIONS:

The State of Maine 2002 *Integrated Water Quality Monitoring and Assessment Report*, prepared pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act, lists a 139.2 mile segment of the Sandy River (segment #315R) in Category 2, *Rivers and Streams Attaining Some Designated Uses, Insufficient Information for Other Uses.*

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 unnamed stream to which Dunham's discharges its wastewater is not listed in the above cited report. However, the Department has site specific information on the receiving water obtained through site investigations and macroinvertebrate biomonitoring conducted in 2002. Staff from the Department's Division of Environmental Assessment observed an extensive amount of algae in the receiving water adjacent to Dunham's fish pond, in the fish pond itself, and evidence of seeps between the two bodies. Further, past practices at Dunham's included the discharge of solid waste materials removed during the cleaning of fish pools and tanks to the ground surface behind the facility, upgradient of the fish pond and the unnamed stream. This area is subject to sheet flow of water into the fish pond and stream during storm events or periods of high groundwater. MEDEP DEA noted that extensive algae growth was not observed upstream or downstream of this location. Department biomonitoring indicated that the receiving water does not meet Class B macroinvertebrate criteria.

The Department has no information that Dunham's causes or contributes to the non-attainment status of the Sandy River. However, the Department maintains that Dunham's discharge and past practices have caused or contributed to non-attainment of Class B standards in the receiving water due to nutrient inputs.

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 Avon 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 13). Dunham's 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. Further, the Department's interpretation of 38 M.R.S.A., §464.4.A(1) is that water quality in receiving waters with watersheds of less than 10 square miles is sufficiently at risk that facility effluent is to be held to certain standards until such time that practical alternatives are available and the discharge can be eliminated. Therefore, if Dunham's wishes to increase the number and/or mass of fish on station or undertake other practices that may add or increase the discharge of pollutants, it may need to provide additional wastewater treatment to hold effluent quality constant.

a. Flow: This permitting action establishes a monthly average flow limit of 0.5 mgd, considered representative of the typical facility discharge during spring high flow periods from use of 0.08 MGD of well water as well as estimates provided by Dunham's of flows entering the fee fishing pond from the surface water diversion, surface runoff, and groundwater. This limit is intended to provide Dunham's with operational flexibility. This permitting action establishes requirements for daily measurement of discharge flow,

consistent with Department guidelines for wastewater treatment facility discharges. The facility currently does not have accurate flow measurement capabilities. Pursuant to 38 M.R.S.A., §414-A.2 and Permit Special Condition G, by January 1, 2006, the permittee shall install and have calibrated an accurate effluent flow measuring device at the fee fishing pond outlet. From the effective date of this permit until the flow measuring device is operational or January 1, 2006, whichever occurs sooner, effluent flow may be estimated. Following this event, flow shall be measured.

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. Dunham's discharges its facility wastewater through an approximately 300 foot long historic diversion of an unnamed stream, to the main channel of the unnamed stream, which then flows to the Sandy River. With a monthly average flow limitation of 0.5 MGD, the dilution factors associated with the Dunham's facility are calculated as follows:

Acute: 1Q10 = 0.03 cfs $\Rightarrow \frac{(0.03\text{ cfs})(0.6464) + 0.5\text{ MGD}}{0.5\text{ MGD}} = 1.04:1$

Chronic: 7Q10 = 0.04 cfs $\Rightarrow \frac{(0.04\text{ cfs})(0.6464) + 0.5\text{ MGD}}{0.5\text{ MGD}} = 1.05:1$

Harmonic Mean = 0.12 cfs $\Rightarrow \frac{(0.12\text{ cfs})(0.6464) + 0.5\text{ MGD}}{0.5\text{ MGD}} = 1.16:1$

c. BOD and TSS: 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 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 (Permit Special Condition M, Fact Sheet Section 13). BOD and TSS concentration limits of 6 mg/L for monthly average and 10 mg/L for daily maximum, as well as mass limits based on the concentration limits and the monthly average effluent flow, shall be in effect for Outfall #001A. 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 limits established in this permitting action. It is the Department's intent to re-evaluate and potentially revise limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology for the industry. The Department reserves the right to reopen facility discharge permits to establish these limits pursuant to Special Condition O of this permit.

This permitting action establishes once per two-week effluent BOD and TSS monitoring 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 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. 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 1.05:1 described in Fact Sheet Section 6b, Dilution Factors, is being utilized in calculation of a monthly average water quality based effluent limit of 0.04 mg/L. This permitting action is also establishing a monthly average mass limit of 0.15 lbs/day based on the concentration limit, monthly average effluent flow limit, and a conversion factor of 8.34 lbs/gallon. Further, this permitting action is establishing monitoring and reporting requirements for the monthly average and daily maximum phosphorus and 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 establishes phosphorous and orthophosphate limits and monitoring requirements from June 1 through September 30 each year. As phosphorous limitations constitute new water quality based limits for the Dunham's facility, this permitting action provides a schedule of compliance for their effective date (Permit Special Condition G) to provide for infrastructure, operation and maintenance upgrades, as appropriate, to insure compliance, pursuant to 38 M.R.S.A. §414-A.2. The monthly average phosphorous limits shall be in effect beginning in June 2008. Prior to this date, the permittee shall be subject to monitoring and reporting requirements for this parameter, but not effluent limitations. 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. Based on the results of monitoring, the Department may reopen the permit in the future pursuant to Special Condition O to address facility specific effluent limitations, monitoring and operational requirements.

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).

e. Fish on Hand: This permitting action establishes reporting requirements for monthly average and daily maximum mass of fish on hand. 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. 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 1.04:1 described in Fact Sheet Section 6b, Dilution Factors, yields the following acute water quality based effluent limit:

1.56 mg/L (acute criteria) x 1.04 (dilution) = 1.62 mg/L acute formalin limit

Comparatively, previous licensing actions for other fish hatcheries in Maine 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. Dunham's reports that formalin is currently not used at the facility, but that they would like the ability to use it in the future for treatment of fungal infections during egg incubation, as needed. Dunham's currently operates three egg troughs in series at a flow-through rate of 5 gpm. Dunham's projects the anticipated future facility upgrade to include two sets of four egg troughs in separate series flows of 5 gpm. For egg treatments, Dunham's projects administering 8-ounces of formalin during a 30-minute drip in flow-through water in each trough line with a resulting concentration of approximately 417 ppm formalin. When needed, the formalin will be administered four times per week to all eight troughs. Formalin may be used for a total of eight weeks per year, considering spring and fall incubation periods for Rainbow trout and Brook trout respectively. The rate of water through the egg trays of 5 gpm per row times two rows times the 30-minute treatment period yields 300 gallons of initial wastewater. The total hatchery facility wastewater flow during the same 30-minute period can be calculated by taking the monthly average well water usage of 55.5 gpm (0.08 mgd) times 30 minutes yielding 1,665 gallons. The formalin would receive an initial dilution of 1,665 gal. / 300 gal = 5.6:1. The 1,665 gallons of hatchery wastewater flows to the facility fee fishing pond, which has a capacity of 400,000 gallons. The formalin would receive a second dilution of 400,000 gal / 1,665 gal = 240:1. The end of pipe concentration from egg treatment can be calculated as follows:

417 ppm formalin / 5.6 / 240 = 0.31 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 BPT. As the 0.31 ppm (mg/L) "BPT" value is more stringent than the 1.62 ppm (mg/L) water quality based limit, it is being established as the daily maximum formalin concentration limit. 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 (16 oz or 0.125 gallons) times the specific gravity of formalin (9.13 lbs/gal), resulting in a value of 1.1 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 6 and Fact Sheet Section 17.

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: This permitting action establishes a daily maximum pH limit of 6.0 – 8.5 standard units, consistent with the pH limit established in discharge licenses for other fish hatcheries, and 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.

7. 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. In this permitting action, the Department is establishing effluent limitations, monitoring and operational requirements consistent with other permitted fish hatcheries and rearing facilities in Maine and specifically protective of this receiving water. The rationale for these actions is contained in Fact Sheet Sections 6, *Effluent Limitations & Monitoring Requirements* and other applicable sections. Based on the information provided in the referenced sections, the Department considers the anti-degradation policy to be satisfied.

8. ALTERNATIVE DISCHARGE STUDY:

Maine Law, 38 M.R.S.A., § 464.4(A)(1), states that discharges into "*waters having a drainage area of less than 10 square miles...licensed prior to January 1, 1986* (and those facilities addressed in 38 M.R.S.A., § 464.12)*, are allowed to continue only until practical alternatives exist*". Pursuant to this, as described in Permit Special Condition H, on or before six-months prior to expiration of this permit, Dunham's is required to submit to the Department for review, an Alternative Discharge Study (ADS) report for the Avon facility to determine if practical alternatives to the discharge exist.

Alternative Discharge Studies 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.

9. SETTLING AND FISH POND 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.

In this permitting action, the Department is requiring that the settling tanks/ponds and fish ponds be cleaned when accumulated materials occupy 20% of any pond's capacity, when material deposition in any area of the ponds exceeds 50% of the operational depth, or at any time that solids from the ponds are contributing to a violation of permit effluent limits.

10. 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."* In this permitting action, as a salmonid aquaculture facility, Dunham's 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.

11. 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.

This permitting action requires that 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. Further, 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.

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.

Sodium Chloride: Dunham's uses sodium chloride (NaCl, salt) during summer months for treatment of fungal infections or external parasites on fish. The salt is administered as needed to tanks within the facility barn at a rate of approximately 4 pounds per tank/pool and monthly to outside tanks at a rate of one 30-pound bag per tank/pool. Dunham's currently has three 300-gallon, one 120-gallon, and one 160-gallon tanks on the first floor of the barn and six 300-gallon pools on the second floor, for a cumulative inside volume of 2,980-gallons (0.00298 million gals) subject to salt treatments. To calculate the approximate concentration of NaCl in the 11 inside pools/tanks in parts per million (ppm), the following formula can be used. This calculation assumes equal volumes for all tanks, therefore smaller volume tanks would have higher concentrations.

44-lbs NaCl divided by 0.00298 million gals divided by 8.34 lbs/gal = 1,770 ppm

Outside the facility, Dunham's currently has one 1,100-gallon pool, two 1,700-gallon pools, and two 2,300-gallon pools, for a cumulative outside volume of 9,100-gallons subject to salt treatments. To calculate the approximate concentration of NaCl in the 5 outside tanks, the following formula can be used. This calculation also assumes equal volumes for all tanks.

75-lbs NaCl divided by 0.0091 million gals divided by 8.34 lbs/gal = 998 ppm

These concentrations are much higher than the concentrations used on fish by other facilities in Maine (typically 25-250 ppm) and were calculated from estimates provided by the permittee of the amount of salt used. To estimate the maximum possible concentration of NaCl in the facility effluent, the Department utilized the estimated amount of salt added to all pools/tanks and then diluted in the 400,000-gallon fee fishing pond. This is a conservative

estimate as the amount of salt used appears to be high and as all pools and tanks may not be subject to treatment simultaneously.

119-lbs NaCl divided by 0.4 million gals divided by 8.34 lbs/gal = 35.7 ppm

The average concentration of NaCl in sea water is estimated at 35 parts per thousand (ppt) or 35,000 ppm. The Department's Division of Environmental Assessment (DEA) reports that sampling results in Maine marine waters indicate salinity levels of approximately 30 ppt or 30,000 ppm. The DEA further reports that instream NaCl levels of between 1 and 5 ppt (1,000 and 5,000 ppm) can potentially result in harm to freshwater aquatic life. The effluent concentrations calculated above would be subject to further dilution upon entering the receiving water. In that the effluent NaCl concentrations are anticipated to fall below the 1,000 ppm level of concern, the Department is not establishing specific limitations or monitoring requirements for NaCl in this permitting action. Instead, use of NaCl shall be consistent with the use and record keeping requirements for therapeutic agents specified above.

Other Materials: Dunham's reports using no other therapeutic or medicinal agents.

12. DISINFECTING/SANITIZING AGENTS:

This permitting action requires that 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.

Iodine: Dunham's reports using approximately 0.5 gallons of iodine per year as an egg surface and/or equipment disinfectant. When used, the iodine is diluted to a concentration of approximately 100 ppm for use and is subsequently further diluted in the full facility wastewater stream and the fee fishing pond prior to discharge. At this time, there are no ambient water quality criteria for iodine. Therefore, no effluent limitations or monitoring requirements are being established for iodine at this time.

Other Materials: 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.

13. 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 Avon facility shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, removal of solids. Dunham's 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 for this industry 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.

14. AMBIENT MACROINVERTEBRATE BIOMONITORING:

Based on available data, the Department is concerned with the effects of fish hatchery effluent discharges on rivers and streams in Maine. As macroinvertebrate communities provide indications of the overall ecological health of a receiving water, the Department has determined that biomonitoring is needed to better evaluate attainment of river and stream water classification standards and designated uses, resource impacts, and corrective measures when necessary. In order to address this need, most permitting actions for facilities similar to Dunham's require annual ambient macroinvertebrate biomonitoring consistent with "*Methods for Biological Sampling and Analysis of Maine's Rivers and Streams*" (DEP #LW0387-B2002, August 2002) and annual reporting of the results. As described in Fact Sheet Section 5, biomonitoring conducted by the Department indicated that the receiving water did not meet macroinvertebrate criteria for its classification in 2002. The Department believes that facility practices that caused or contributed to the non-attainment status, such as deposition of waste materials on the ground surface, have been eliminated. Dunham's is undertaking improvements and upgrades in facility infrastructure, operation and maintenance. The Department anticipates that these modifications and operation of the facility within compliance of the effluent limitations, monitoring and operational requirements established in this permitting action will result in improvement of ambient conditions. The DEP DEA has determined that annual macroinvertebrate biomonitoring is not currently necessary for Dunham's in consideration of these factors and the Department's intent to conduct biomonitoring in the future.

15. 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 Dunham facility'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 the unnamed tributary to the Sandy River. 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 at two locations, the first in the natural stream adjacent to the fish pond and the second at the confluence of the natural stream and the fish pond outlet stream, unless revised by the Department. On or before three months following the effective date of this permit, Dunham's 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.

16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION:

Leading up to the formal listing of the Atlantic salmon as an endangered species on November 17, 2000, and in subsequent draft MEPDES Permit / Maine WDL reviews, the US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (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 the facility to prevent the escape of raised salmon or other species of concern in order to avoid impacts on native fish populations.

Dunham's Pure Water Hatchery is a commercial Brook trout and Rainbow trout hatchery and rearing facility that produces fish for private stocking. Dunham's does not raise Atlantic salmon and thus is not subject to salmon genetic testing requirements. Its Brook trout egg stock comes from the Maine Department of Inland Fisheries and Wildlife hatchery in Phillips, Maine, while its Rainbow trout eggs come from adults kept in the facility fee fishing pond. The origin of these fish has not been provided. Dunham's reports that effluent screens are in place at the outlets of the hatchery troughs, fry rearing pools and tanks, grow-out and holding pools and tanks, wastewater settling pools and tanks, and the fee fishing pond to prevent the escapement of fish. All screens are sized according to the size of the fish and are inspected regularly. Any escapees would have to elude these measures to enter the receiving water. The section of the Sandy River in the vicinity of the Dunham's hatchery is managed by the Maine Department of Inland Fisheries and Wildlife (MDIFW) for Brown trout and Smallmouth bass, with native populations of Brook trout further upriver. MDIFW allows the stocking of small private fish ponds with Rainbow trout in this region of the lower Sandy River and reports no concerns with escapement of Brook trout or Rainbow trout from the Dunham's facility. MDIFW has indicated that they see no need for a CMS plan at Dunham's and points out that MDIFW regulates the species raised at hatcheries and rearing facilities in Maine through Cultivation Licenses issued by that agency.

USFWS and NOAA Fisheries have stated that they see no need to require a CMS plan at Dunham's from an endangered Atlantic salmon perspective, unless the facility raises salmon at some point in the future. USFWS and NOAA Fisheries state, "*the hatchery is located outside the geographic range of the Gulf of Maine Distinct Population* (Segment (DPS)) *of Atlantic Salmon, which includes the Kennebec River up to the site of the former Edwards Dam. Although the discharge site of the Dunham hatchery is eventually 'connected' to the Kennebec River within the Gulf of Maine DPS, we believe the project is remote enough that there is no danger posed to salmon in the lower Kennebec River, plus the hatchery is not proposing to raise Atlantic salmon.* Therefore, this permitting action does not require a CMS plan at this time, but advises Dunham's that if the facility ever intends to house Atlantic salmon or other species determined by USFWS, NOAA Fisheries, or MDIFW to be of risk to native salmon, other native species, or to aquatic habitats, it should submit plans for initiating genetic testing (salmon only) and/or a CMS for review and approval prior to introducing those species at the facility.

17. SAMPLE CALCULATIONS FOR EFFLUENT FORMALIN

To calculate the effluent formalin concentration, the permittee shall utilize the concentration administered, the volume of water to which the formalin is added, and dilutions provided from administration to end-of-pipe. Parts per million (ppm) and milligrams per liter (mg/L) are equivalent measurements. The Department's method of calculating effluent formalin levels at Dunham's 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.

18. DISCHARGE IMPACT ON RECEIVING WATER QUALITY:

As permitted, the Department has determined the existing water uses will be maintained and protected and the discharge will not cause or contribute to the failure of the unnamed stream and tributary to the Sandy River to meet standards for Class B classification.

19. PUBLIC COMMENTS:

Public notice of this application was made in the Lewiston Sun Journal newspaper on or about March 15, 2001. The Department receives public comments on an application until the date a final agency action is taken on that application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to Chapter 522 of the Department's rules.

20. DEPARTMENT CONTACTS:

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

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

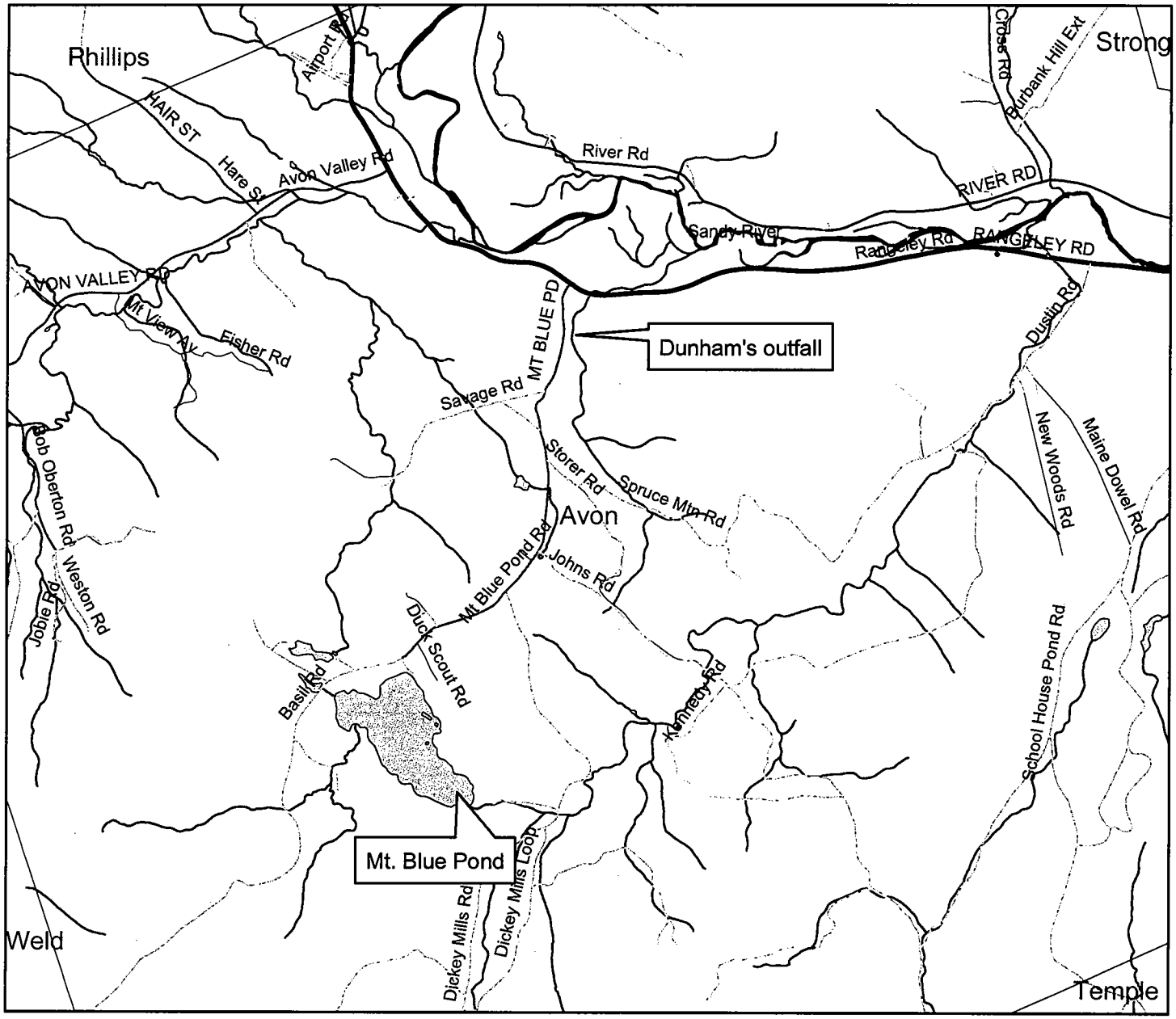
Telephone: (207) 287-6114
Fax: (207) 287-7191
email: Robert.D.Stratton@maine.gov

21. RESPONSE TO COMMENTS:

During the period of September 13, 2005 through October 14, 2005, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued to Dunham's Pure Water Hatchery for the proposed discharge. The Department did not receive any comments that resulted in significant revisions to the permit. Therefore, no response to comments has been prepared.

ATTACHMENT A

(Facility Location Map)



Legend

Rivers

- AA
- A
- B
- C

Streams

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

Roads

JURISDICTION

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

N

0 0.25 0.5 1 1.5 2 Miles

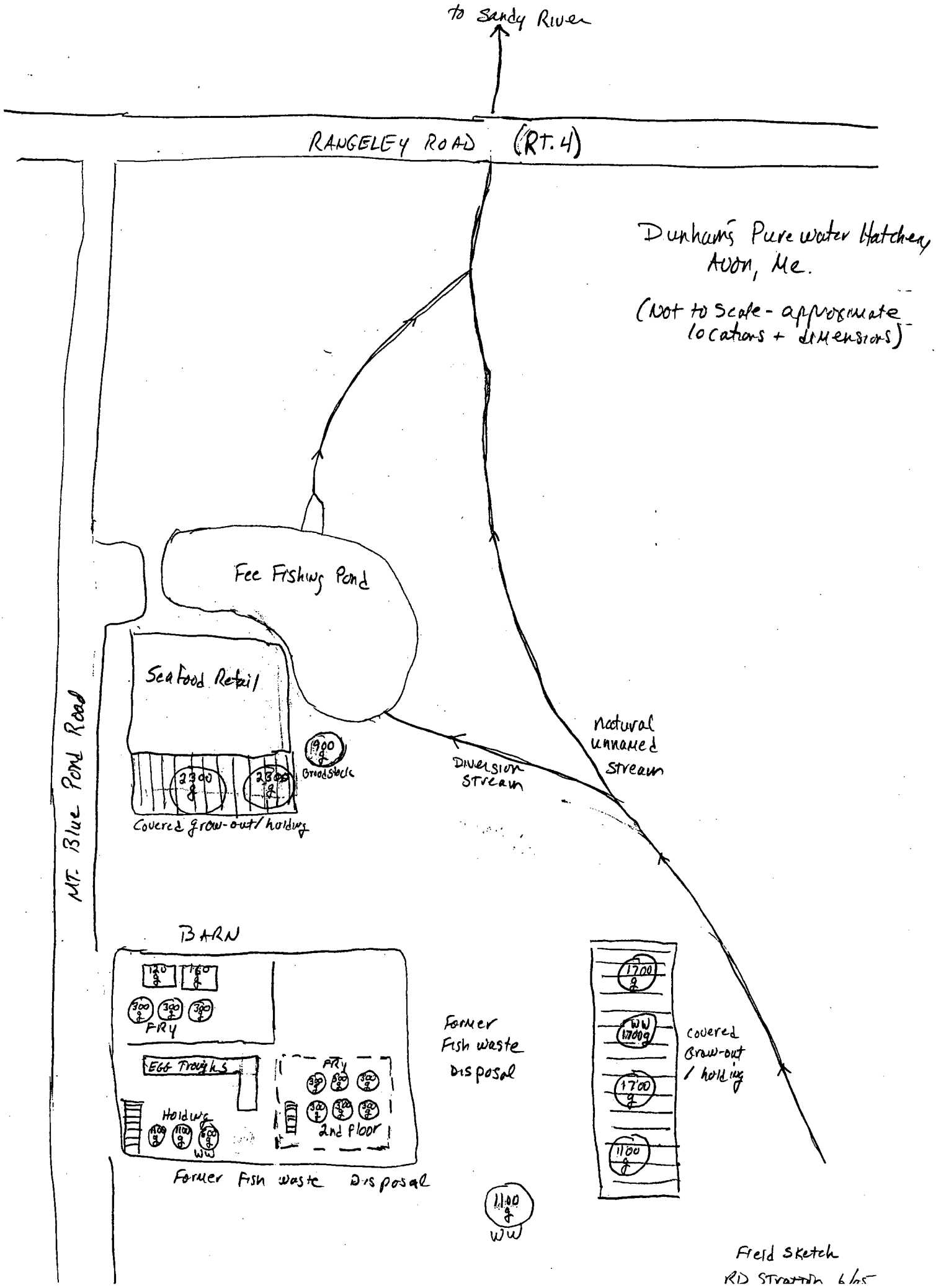
Dunham's Fish Hatchery
Avon, Maine

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

DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF MAINE

ATTACHMENT B

(Facility Site Plans)


to Sandy River
RANGELEY ROAD (RT. 4)
Dunham's Pure water Hatchery
Avon, Me.
(Not to Scale - approximate locations + dimensions)
Fee Fishing Pond
Seafood Retail
1900 g
Broodstock
2300 g
2300 g
Covered grow-out/holding
Diversion stream
natural unnamed stream
MT. Blue Pond Road
BARN
120 g
160 g
300 g
300 g
300 g
FRY
EGG Troughs
FRY
300 g
300 g
300 g
300 g
300 g
300 g
2nd floor
Holding
1100 g
1100 g
800 g
WW
Former Fish waste Disposal
Former Fish waste Disposal
1700 g
WW 1700 g
1700 g
1100 g
covered Grow-out / holding
1100 g
WW
Field Sketch
RD Stratton 6/05