

**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§ 1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21 §§26-53),

Australis Aquaculture, LLC

Is authorized to discharge from the facility located at

**Australis Aquaculture, LLC
1 Australia Way
Turners Falls, MA 01376**

To receiving water named **Connecticut River (MA 34-02)**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit will become effective on the first day of the calendar month immediately following sixty days after signature.

This permit and the authorization to discharge shall expire at midnight five years from the last day of the month preceding the effective date of the permit.

This permit supersedes the permit issued on September 10, 2003.

This permit consists of 11 pages in Part I, including effluent limitations, monitoring requirements and 25 pages in Part II including Standard Conditions.

Signed this 23rd day of February, 2010

/S/ SIGNATURE ON FILE

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Glenn Haas, Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge treated wastewater from the fish production process through Outfall 002 to the Connecticut River. Such discharge shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent prior to mixing with any other waste streams.

Effluent Characteristic		Discharge Limitation			Monitoring Requirements ¹	
Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow	MGD	0.3	-	0.3	Continuous ²	Recorder
BOD ₅	lb/day	100	-	200	Twice per month ³	Composite ⁴
TSS	lb/day	75	-	99	Twice per month ³	Composite ⁴
pH ⁶	SU	6.5-8.3 (See I.A.3 Page 3)			Monthly	Grab
Dissolved Oxygen	mg/l	-	-	> 6.0 (See I.A.4 Page 3)	Weekly ³	Grab
Total Phosphorous	mg/l	Report	-	Report	Monthly ⁷	Composite ⁴
Total Nitrogen ⁸	mg/l lb/day	Report mg/l Report lb/day	-	Report mg/l Report lb/day	Monthly ⁷	24-hour Composite ⁵
Nitrate plus Nitrite	mg/l	Report	-	Report	Monthly ⁷	24-hour Composite ⁵
Total Kjeldahl Nitrogen	mg/l	Report	-	Report	Monthly ⁷	24-hour Composite ⁵
Total Ammonia	mg/l	Report	-	Report	Monthly ⁷	24-hour Composite ⁵
Total Residual Chlorine	mg/l	1	-	1	During major cleaning events, such as disinfection of a tank ^{9 10}	Grab
Ozone, Residual	mg/l	>0.02 ¹¹	-	>0.02 ¹¹	Daily	Grab

Footnotes on Page 3

Footnotes:

1. Samples taken in compliance with the monitoring requirements specified above shall be representative of all waste streams and taken prior to entering the receiving water.
2. The flow shall be continuously measured and recorded using a flow meter and totalizer.
3. The BOD₅, TSS, and Dissolved Oxygen samples shall be taken during maintenance activities.
4. A composite sample shall consist of at least 8 grab samples collected during the cleaning cycle.
5. A twenty-four hour composite sample will consist of at least twenty four (24) grab samples taken during a consecutive twenty-four hour period (e.g. 0700 Monday to 0700 Tuesday).
6. Required for State Certification.
7. Samples for Nitrate plus Nitrite, Total Kjeldahl Nitrogen, Total Ammonia, and Total Phosphorus shall be taken monthly during maintenance activities.
8. See Part I.C, Special Conditions, for requirements to evaluate and implement optimization of nitrogen removal.
9. The minimum level (ML) for total residual chlorine is defined as 0.05 mg/l. This value is the minimum level for chlorine using EPA approved methods found in Standard Methods for the Examination of Water and Wastewater, 20th Edition, Method 4500 CL-E and G, or USEPA Manual of Methods of Analysis of Water and Wastes, Method 330.5. One of these methods must be used to determine total residual chlorine. For effluent limitations less than 0.05 mg/l, compliance/noncompliance will be determined based on the ML. Sample results of 0.05 mg/l or less shall be reported as zero on the discharge monitoring report.
10. The effluent shall be monitored hourly for TRC when chlorine cleaning water is added to the system. Sampling should continue for one hourly period following the first value below the ML assuming the level remains below the ML. The effluent sample shall be representative of the maximum concentration of chlorine levels in the final effluent.
11. The ozone residual greater than 0.02 mg/l is following sixty (60) seconds contact time.

Part I.A (continued)

2. The discharge shall not cause a violation of the water quality standards of the receiving waters which have been or may be promulgated.
3. The pH of the effluent shall not be less than 6.5 SU nor greater than 8.3 SU and not more than 0.5 units outside of the background range. There shall be no change from background conditions that would impair any use assigned to this class.
4. Dissolved oxygen shall be maintained at a minimum of 6.0 mg/l.
5. The discharge shall be adequately treated to ensure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum, or other visible pollutants. The discharge shall be adequately treated to ensure that the surface waters remain free from pollutants which produce odor, color, taste, or turbidity in the receiving waters which is not naturally occurring and would render it unsuitable for its designated uses.
6. There shall be no direct discharge of "cleaning water" (i.e., water containing settled solids that have accumulated on the bottom of active rearing units that is discharged,

absent some form of solids removal, along with a portion of the culture water directly to the receiving water during periodic cleaning operations) from any rearing unit (fish farm building, rectangular raceway, circular pool, etc.). However, the discharge of “cleaning water” to a settling pond, lagoon, empty rectangular raceway or circular pool, and/or clarifier for the purposes of settling solids including the temporary storage of those solids followed by the discharge of any decant water that accumulates above those solids and/or any water that flows slowly over those solids is allowed as long as that decant and/or overflow water discharges through a currently permitted outfall (Outfall 002).

7. The effluent shall not contain materials in concentrations or combinations which are hazardous or toxic to human health, aquatic life of the receiving water or which would impair the uses designated by its classification.
8. The results of sampling for any parameter above its required frequency must also be reported, in accordance with 40 CFR §122.41(l)(4)(ii).
9. The permittee shall notify EPA and MassDEP in writing of any changes in the operations, including the use of chemical additives, at the facility that may have an effect on the permitted discharge of wastewater from the facility.
10. Any hypochlorite solution applied to the surface of any rearing equipment exposed to culture water must be neutralized prior to that equipment being exposed to culture water.
11. The permittee shall notify EPA and MassDEP within 24-hours upon the occurrence of any mortality of greater than 25 percent in any aquatic species under culture at the facility (excluding larval fish) in accordance with reporting requirements in **Standard Conditions Part II.D.1.e.**
12. Any change in: 1) the fish species to be raised at this facility or, 2) the development stage to be attained at this facility, will require written notification to EPA and the State and possible permit modification.
13. There shall be no discharge of untreated wastewater resulting from cleaning accumulated solids in the raceways, culture tanks, screens, and associated equipment.
14. This permit shall be modified, or revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - a. contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or
 - b. controls any pollutant not limited by this permit. If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the Act.
15. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 CFR §122.42):
 - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - i. One hundred micrograms per liter (100 µg/l);
 - ii. Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-

- dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for animony;
- iii. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
 - iv. The level established by the Director in accordance with 40 CFR §122.44(f).
- b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
- i. Five hundred micrograms per liter (500 µg/l);
 - ii. One milligram per liter (1 mg/l) for antimony;
 - iii. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
 - iv. The level established by the Director in accordance with 40 CFR §122.44(f).
- c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

16. Toxics Control

- a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.
- b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

17. Medication

- a. The permittee shall use only medications and disease control chemicals in dosages and combinations as approved by the U.S. Food and Drug Administration (USFDA), U.S. Fish and Wildlife Service (USF&WS), EPA and MassDEP.
- b. The permittee shall use these medications and chemicals as needed to treat a disease or disease-causing conditions. The prophylactic use of disease control medications is prohibited.
- c. The permittee shall notify within 24 hours by telephone and within 5 working days in writing the Regional Administrator at EPA, U.S. Fish and Wildlife Service, the Massachusetts Division of Fisheries and Wildlife, and the Massachusetts Department of Environmental Protection of the emergency use or the immediate intended use of any medication and/or chemical not specifically identified in the Best Management Practices Plan as described below.
- d. EPA will notify the permittee when the use of a specific chemical described in PART I.A.17.c, immediately above, is unacceptable or that the dosage concentration or frequency level must be modified to protect the aquatic community in the receiving water.

B. NARRATIVE EFFLUENT LIMITATION REQUIREMENTS FROM 40 CODE OF FEDERAL REGULATIONS (CFR) PART 451 WITH MODIFICATIONS

Pertinent definitions from 40 CFR Part 451 for specific terms used in this section are listed under *Item 5. General Definitions* at the end of this section.

1. Drug Usage

Except as noted below, the permittee must notify EPA and MassDEP in accordance with the following procedures of the use of any investigational new animal drug (INAD) or extralabel drug where such a use may lead to a discharge of the drug to waters of the United States as stipulated below. However, reporting is not required for any INAD or extralabel drug use that has been previously approved by the USFDA for a different species or disease if the INAD or extralabel use is at or below the approved dosage and involves similar conditions of use.

- a. The permittee must provide to EPA a written report of an INADs impending use within 7 days of agreeing or signing up to participate in an INAD study. The written report must identify the INAD to be used, method of use, the dosage, and the disease or condition the INAD is intended to treat.
- b. For INADs and extralabel drug uses, the permittee must provide an oral report to EPA as soon as possible, preferably in advance of use, but no later than 7 days after initiating use of that drug. The oral report must identify the drugs used, method of application, and the reason for using that drug.
- c. For INADs and extralabel drug uses, the permittee must provide a written report to EPA within 30 days after initiating use of that drug. The written report must identify the drug used and include: the reason for treatment, date(s) and time(s) of the addition (including duration), method of application; and the amount added.

2. Structural Failure and/or Damage to Culture Units

The permittee must notify EPA and MassDEP in accordance with the following procedures when there is a “**reportable failure**” (as defined immediately below) in, or damage to, the structure of an aquatic animal containment system (i.e., culture unit) or its wastewater treatment system that results in an unanticipated material discharge of pollutants to waters of the United States.

- a. For this facility, a “**reportable failure**” applies only to active culture units (ones that contain fish and flowing water) and their ancillary components and refers to the collapse or damage of a rearing unit or its wastewater treatment system; damage to pipes, valves, and other plumbing fixtures; and damage or malfunction to screens or physical barriers in the system, which would prevent the rearing unit from containing water, sediment (i.e. settled solids), and the aquatic animals being reared. Wastewater treatment systems include ponds to which “cleaning water” is directly discharged and culture units which are used for the temporary storage of settled solids removed from active culture units.
- b. The permittee must provide an oral report to EPA within 24 hours of discovery of any “**reportable failure**” as defined in item “a” immediately above or damage that results in a material discharge of pollutants, describing the cause of the failure

or damage in the containment system and identifying materials that have been released to the environment as a result of this failure.

- c. The permittee must provide a written report to EPA within 7 days of discovery of the failure or damage documenting the cause, an estimate of the material released as a result of the failure or damage, and steps being taken to prevent a recurrence.

3. Spills

In the event a spill of drugs, pesticides or feed occurs that results in a discharge to water of the United States, the permittee must provide an oral report of the spill to EPA and MassDEP within 24 hours of its occurrence and a written report within 7 days to the above Agencies in accordance with Section D.1.e.(1) of the Standard Conditions of this permit. The report shall include the identity and quantity of the material spilled.

4. Best Management Practices (BMP) Plan

- a. The permittee shall develop, implement, and maintain a plan which establishes Best Management Practices (BMPs) 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 plan is to identify and to describe the practices which minimize the amounts of pollutants (biological, chemical and medicinal) discharged to surface waters.
- b. The permittee shall implement the intent of the BMP requirements described below upon the permit's effective date. However, the permittee has **180 days following the effective date of the permit** to certify in writing to EPA and MassDEP that a written Plan has been developed in accordance with requirements listed in this part. This certification must be submitted with the appropriate DMR. A current copy of the plan shall be maintained at the facility and shall be made available for inspection by EPA and MassDEP upon request.
- c. The permittee shall amend and update the BMP plan within 14 days following a change in facility design, construction, operation, or maintenance which affects the potential for the discharge of pollutants into surface waters; a release of a reportable quantity of pollutants as described in 40 CFR §302; or a determination by EPA, MassDEP or the permittee that the BMP plan appears to be ineffective in achieving the general objectives of controlling pollutants in discharges to surface waters.
- d. Below is a list of requirements that shall be addressed in the BMP Plan, at a minimum.
 - i. *Solids control*
 1. Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the U.S.
 2. In order to minimize the discharge of accumulated solids from settling ponds and basins and production systems, identify and implement procedures for routine cleaning of rearing units and off-

line settling basins, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting aquatic animals in the production system. **Part I.A.6** above prohibits the direct discharge of “cleaning water” absent some form of solids removal prior to discharge.

3. A description of where the removed material is to be placed and the techniques used to prevent it from re-entering the surface waters from any on-site storage. If the material is removed from the site, describe who received the material and its method of disposal and/or reuse.
 4. Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the U.S., except in cases where the permitting authority authorizes such discharge in order to benefit the aquatic environment.
- ii. *Biological control*
1. The precautions that will be exercised by the facility to prevent aquatic organisms that are not indigenous nor naturalized to Massachusetts waters from becoming established in the local surface waters.
 2. A description for the storage and treatment of Outfall 002 discharge to prevent biological pollution (non-indigenous organisms including fish parasites and fish pathogens and dead or dying fish) from entering the receiving water when the cultured fish population or a portion thereof are showing signs of stress.
- iii. *Materials storage*
1. Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the U.S.
 2. Implement procedures for properly containing, cleaning, and disposing of any spilled material.
- iv. *Structural maintenance*
1. Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.
 2. Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.
- v. *Recordkeeping*
1. In order to show how representative feed conversion ratios were calculated, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the number and weight of aquatic animals.
 2. Keep records documenting the frequency of cleaning, inspections, maintenance and repairs. In addition, records of all medicinal and chemical usage (i.e., for each occurrence) at the facility shall be

recorded and filed in the Plan to include the dosage concentration, frequency of application (hourly, daily, etc.) and the duration (hours, days) of treatment, and the method of application.

vi. *Training*

1. In order to ensure the proper clean-up and disposal of spilled material adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.
2. Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

vii. *Medications and chemicals*

For each medication or chemical that are expected to be used in the culture tanks & raceways, identify:

1. Product name of the medication or chemical.
2. The chemical formulation of the medication or chemical.
3. The purpose or use of the chemical.
4. The dosage concentration, frequency of application (hourly, daily, etc.) and the duration (hours, days) of treatment.
5. The method of application.
6. Material Safety Data Sheets (MSDS), Chemical Abstracts Service (CAS) Registry number for each active therapeutic ingredient.
7. The method or methods used to detoxify the wastewater prior to discharge following application of chemical and/or medication.
8. Information on the persistence and toxicity of each medication or chemical.
9. Information on the Food and Drug Administration (USFDA) approval for the use of said medication or chemical on fish or fish related products used for human consumption.
10. Available aquatic toxicity data for each medication or chemical used (vendor data, literature data, etc.); LC₅₀ at 48 and/or 96 hours and No Effect Level (NOEL) concentrations for typical aquatic organisms (salmon, trout, daphnia, fathead minnow, etc.).

5. General definitions

- a. **Approved dosage** means the dose of a drug that has been found to be safe and effective under the conditions of a new animal drug application.
- b. **Aquatic animal containment system** means a culture or rearing unit such as a raceway, pond, tank, net or other structure used to contain, hold or produce aquatic animals. The containment system includes structures designed to hold sediments and other materials that are part of a wastewater treatment system.
- c. **Drug** means any substance defined as a drug in section 201(g)(2) of the Federal Food, Drug and Cosmetic Act (21 U.S.C. 321).
- d. **Extralabel drug use** means a drug approved under the Federal Food, Drug and Cosmetic Act that is not used in accordance with the approved label direction, see 21 CFR §530.

- e. **Investigational new animal drug (INAD)** means a drug for which there is a valid exemption in effect under section 512(j) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. 360b(j), to conduct experiments.
- f. **New animal drug application** is defined in 512(b)(1) of the Federal Food, Drug, and Cosmetic Act [21 U.S.C. 360(b)(1)].
- g. **Pesticide** means any substance defined as a “pesticide” in section 2(u) of the Federal Insecticide, Fungicide, and Rodenticide Act [7 U.S.C. 136(u)].

C. SPECIAL CONDITIONS

Within **one year of the effective date of the permit**, the permittee shall complete an evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen, and submit a report to EPA and MassDEP documenting this evaluation and presenting a description of recommended operational changes. The methods to be evaluated include, but are not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. The permittee shall implement the recommended operational changes in order to maintain the existing mass discharge loading of total nitrogen. The annual average total nitrogen load from this facility (2008 – 2009) is estimated to be 4.92 lb/day.

The permittee shall also submit an annual report to EPA and MassDEP, **by February 1 each year**, that summarizes activities related to optimizing nitrogen removal efficiencies, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous year.

D. UNAUTHORIZED DISCHARGES

This permit authorizes the permittee to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I.A of this permit. Discharges of wastewater from any other point sources which are not authorized by this permit or other NPDES permits shall be reported in accordance with Section D.1.e.(1) of the Standard Conditions of this permit (twenty-four hour reporting).

E. SLUDGE

The disposal of solid waste materials from the facility shall comply with the appropriate Federal, State and local statutes.

F. MONITORING AND REPORTING

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked **no later than the 15th day of the following month**. Other monitoring results shall be submitted as required by this Permit.

1. Signed and dated original DMRs and all other reports or notifications required herein, shall be submitted to the Director and the State at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (SMR-04)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

The State Agency is:

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street, 2nd Floor
Worcester, MA 01608

And:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection
Western Regional Office
436 Dwight Street
Suite 402
Springfield, MA

2. A copy of all technical information associated with medications and chemicals used for disease/parasite control and complementary aquatic toxicology and biological pollution shall be submitted to the following:

U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

And to:

Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement
Massachusetts Division of Fisheries and Wildlife
Field Headquarters
One Rabbit Hill Road
Westborough, MA 01581

G. STATE PERMIT CONDITIONS

1. This NPDES Discharge permit is issued jointly by the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) under Federal and State law, respectively. As such, all terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chapter 21 §43.
2. EPA shall have the right to enforce the terms and conditions of this Permit pursuant to federal law and MassDEP shall have the right to enforce the Permit pursuant to state law. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of the Permit as issued by the other Agency.

Australis Aquaculture, LLC Response to Comments on Draft National Pollutant Discharge Elimination System (NPDES) Permit No. MA0110264

Introduction:

In accordance with the provisions of 40 CFR §124.17, this document presents EPA's responses to comments received on the draft NPDES permit (MA0110264). The responses to comments explain and support the EPA determinations that form the basis of the final permit. The Australis Aquaculture, LLC draft permit public comment period began September 23, 2009 and ended October 22, 2009. The permittee commented on the draft permit (Section I). The other commenter was the Connecticut River Watershed Council (CRWC) (Section II). Massachusetts Department of Environmental Protection (MassDEP) also provided a correction (Section III). Since the fact sheet is a final document, no changes were made. Instead, the fact sheet comments were noted and a response to them is included in this document.

EPA's decision-making process has benefitted from the various comments and additional information submitted. The information and arguments presented did not raise any substantial new questions concerning the permit. EPA did, however, improve certain analyses and make certain clarifications in response to comments. These improvements and changes are detailed in this document and reflected in the final permit. A summary of the changes made in the final permit are listed below. The analyses underlying these changes are explained in the responses to individual comments that follow.

1. The final permit does not include the concentration-based BOD and TSS limits stated in the draft permit.
2. Reduced monitoring frequency of BOD₅ and TSS from weekly to twice per month. Footnotes 3 and 7 note that samples will continue to be taken during maintenance activities.
3. Part I.A.I. now correctly lists the pH range between 6.5 SU and 8.3 SU.
4. Lower maximum daily TSS limit from 125 lb/day to 99 lb/day.
5. Footnote 10 now states, "The effluent shall be monitored hourly for TRC when chlorine cleaning water is added to the system."
6. Part I.B.4.d.2 now correctly refers to Part I.A.6.
7. The "24-hour Composite" Monitoring Requirement now contains the following footnote, "A twenty-four hour composite sample will consist of at least twenty four (24) grab samples taken during a consecutive twenty-four hour period (e.g. 0700 Monday to 0700 Tuesday)."

I. Australis Aquaculture, LLC Comments on Draft NPDES Permit

Comment 1:

"First, prior to the development of the current wastewater treatment plant, the facility's management entered into an Administrative Consent Order (ACO) with DEP to address compliance issues and establish a common framework for the then proposed upgrades to the facility's wastewater treatment plant. As part of the negotiation of the ACO, the company and DEP, in consultation with EPA, agreed that the permit's BOD and TSS limits would be restated solely as mass-based limits when the permit was renewed. The rationale for the adoption of

mass-based limits (expressed in lbs/day, etc.) was to provide a framework whereby the facility could have the flexibility to continue to increase the degree of water reuse and reduce discharge volume without concern that achieving higher levels of reuse would risk a future effluent violation. However, in the subsequent renewal of the permit, the mass-based limits were added but the concentration-based limits were not removed as the parties agreed.

The original rationale for stating BOD and TSS limits based on mass rather than concentration remain valid and have actually become more important; i.e., energy costs associated with heating of the makeup water is a major factor in the economic viability of the operation. The company may wish to pursue future water-saving technologies or operational strategies (the development of a water conservation plan is required under the Company's Mass Water Management Act permit). Implementation of some of the most viable water conservation strategies are likely to risk increasing the concentration of BOD or TSS, while actually reducing the total mass of these constituents discharged.

The opportunity to reduce the discharge volume (and mass of BOD and TSS) is afforded by the fact that the facility's WWTP combines higher and a lower strength influent waste streams on a controlled basis. Changes to the ratio of these two streams may provide an opportunity to conserve water and energy but could increase effluent concentration of BOD and TSS by reducing the volume of the lower-strength waste stream, while reducing the total mass of these constituents discharged. A reduction in the mass of BOD and TSS discharged would be environmentally-desirable, particularly if it reduced heating demands and associated CO₂ emissions, and as such should not be discharged under the permit."

Response 1:

The regulations at 40 CFR §122.45(f)(1) require that all permit limits, standards or prohibitions be expressed in terms of mass units (i.e., pounds) except under certain conditions. A provision included in 40 CFR §122.45(f)(2) states that "pollutants limited in terms of mass may additionally be limited in terms of other units of measurement and the permit shall require the permittee to comply with both limitations." The mass-based limit for each BOD and TSS limit is equal to the concentration-based limit multiplied by a conversion factor of 8.34 (lbs/day)/(mg/L) · 0.3 MGD. (Note: 0.3 MGD is the average monthly and daily maximum flow limits at the facility.) For example, the average monthly TSS limit of 75 lb/day is converted from a mass-based limit to a concentration-based limit of 30 mg/L as follows:

$$30 \text{ mg/L} \cdot [8.34 \text{ (lb/day)/(mg/L)} \cdot 0.3 \text{ MGD}] = 75 \text{ lb/day}$$

The permittee affirms that the facility minimizes the volume of discharge water. EPA supports water and waste minimization strategies. Since historical monitoring data indicates compliance with mass-based limits and the regulations at 40 CFR §122.45(f)(2) allow the permitting authority discretion when setting additional concentration-based limits, the concentration-based limits have been removed from the final permit. Additionally, the final permit includes more stringent mass-based limits in response to the comments submitted by the Connecticut River Watershed Council (please see Section II Comment 3).

Comment 2:

“Secondly, we request that the monitoring frequency for BOD and TSS be reduced from weekly to monthly. A monthly frequency for BOD and TSS is justified based on the consistency and control over the influent waste stream that the facility enjoys, the facility’s long history of stable operations, and would have the additional benefit of making the monitoring frequency consistent with the vast majority of competitive aquaculture facilities regulated under NPDES throughout the US. In our review of federal NPDES permits, only one other US aquaculture facility was found to have a monitoring frequency for BOD and TSS of more than 1x/month.”

Response 2:

DMR data since November 2003 shows that the discharge from the facility is well within the range of BOD and TSS limits stated in the current permit, thereby suggesting that the monitoring requirements can be reduced. Nonetheless, based on the elimination of the concentration-based BOD and TSS limits and the implementation of more stringent mass-based TSS limits (please see Section II Comment 3), the final permit reduces the monitoring frequency to not once, but twice, per month. The final permit retains the requirement that BOD₅ and TSS shall be taken during maintenance activities as noted in footnote 3.

II. Connecticut River Watershed Council (CRWC) Comments on Draft NPDES Permit

Comment 1:

“Protection of existing uses is required under [40 CFR 131.12\(a\)\(1\)](#). The Connecticut River in this section is heavily used for boating, paddling, and swimming. Numerous residents own boat docks in the vicinity of the outfall. A state boat ramp is located in Barton Cove a few miles downstream. The Franklin County Boat Club has a series of docks located next to the state ramp. A canoe and kayak rental facility and campground are operated by First Light Power Resources as part of their hydropower license, and both facilities are located a short distance downstream of the outfall for Australis. This section of the river contains some very deep areas and is a draw for divers.”

Response 1:

The final permit protects the existing uses of Segment 34-02 of the Connecticut River.

Comment 2:

“Page 10 of the Fact Sheet states that the draft permit retains the pH range limit of 6.5 to 8.3 standard units. However, Part I.A.1 of the draft permit gives a range of 6.5-8.0 (part I.A.3 says 6.5 to 8.3). This error should be corrected in the final permit.”

Response 2:

Part I.A.I. now correctly lists the pH range between 6.5 SU and 8.3 SU.

Comment 3:

“As noted in our opening paragraph and in section 3 of the Fact Sheet, this section of river is impaired due to suspended solids. While the source of the solids is likely due to erosion along the banks of the river from operations of Northfield Mountain, it is still appropriate to look at all sources of TSS in this stretch and analyze where reductions could take place. Attachment C of the Fact Sheet lists the TSS discharges between November 2003 and June 2009. It appears that

the facility has had no problem achieving the average monthly and maximum daily lb/day limits for TSS. CRWC therefore recommends that, at a minimum, EPA consider reducing the limits, which would seemingly not impact the permittee. An average monthly of 50 lb/day and a maximum daily of 90 lb/day appears to be easily attainable.”

Response 3:

DMR data since November 2003 demonstrates that the facility has discharged TSS below the values of 50 lb/day average monthly and 90 lb/day maximum daily suggested by CRWC. Since 2008, reported values of TSS concentration have been consistently higher than the values reported in previous years. Based on statistical analysis, guidance for which is provided in the Technical Support Document for Water Quality-based Toxics Control (TSD) March 1991, a maximum daily TSS limit of 99 lb/day is calculated (see Attachment A: Statistical Analysis). The calculated TSS limits are based on a lognormal distribution of TSS concentration values since January 2008, the date after which TSS concentration values are consistently higher. Based on reported effluent monitoring results and statistical analysis (see Attachment A), the final permit replaces the maximum daily TSS limit of 125 lb/day with a more stringent limit of 99 lb/day. The final permit retains the TSS average monthly effluent concentration limit of 75 lb/day stated in the draft permit because it is as stringent as the limit of 75 lb/day calculated using statistical analysis.

Comment 4:

“Attachment A shows a map with only road names labeled. The facility, the outfall, the river, and the location of the former outfall are not marked on the map. CRWC would like to request that, in general, EPA provide maps that give readers a better sense of the location of the discharge point.”

Response 4:

The Connecticut River Watershed Council (CRWC) provided the above comment on the Fact Sheet for the Draft Permit. When issuing a Final Permit, EPA does not modify the Fact Sheet that was produced in conjunction with the Draft Permit. However, comments on the Fact Sheet are addressed in this document, which supplements the Fact Sheet and a more detailed map is provided (see Attachment B: Map of Site and Receiving Water).

Comment 5:

“CRWC supports the requirements of a best management plan for aquaculture operations.”

Response 5:

The final permit retains the Best Management Practices (BMP) Plan described in the draft permit.

III. Massachusetts Department of Environmental Protection (MassDEP) Comments on Draft NPDES Permit

Correction 1:

“Footnote 10 states, ‘The effluent shall be monitored hourly for TRC when chlorine cleaning water is added to the system. Sampling shall be monitored hourly for TRC when chlorine cleaning water is added to the system.’ The sentences are repetitive.”

Response 1:

Footnote 10 has omitted the repetitive statement and now states, “The effluent shall be monitored hourly for TRC when chlorine cleaning water is added to the system.”

Correction 2: “Page 7 should 4.d.2 refer to I.A.6 or I.A.13?”

Response 2: Part I.B.4.d.2 now correctly refers to Part I.A.6 instead of Part I.A. 16.

Correction 3: “The ‘24-hour Composite’ Monitoring Requirement should be explained in a footnote.”

Response 3: The “24-hour Composite” Monitoring Requirement now contains the following footnote, “A twenty-four hour composite sample will consist of at least twenty four (24) grab samples taken during a consecutive twenty-four hour period (e.g. 0700 Monday to 0700 Tuesday).”

Attachment A: Statistical Analysis

Sample Date	Flow Rate (GPD)	TSS MX (mg/l)	Yi ln(TSS MX) (mg/l)	$(y_i - u_y)^2$	TSS MX (lbs/day)	Yi ln(TSS MX) (lbs/day)	$(y_i - u_y)^2$
1/31/2008	130000	32.8	3.4904	0.011997143	27.8	3.3250	0.237027932
2/29/2008	250000	18	2.8904	0.240615059	29.9	3.3979	0.171423064
3/31/2008	230000	17	2.8332	0.299957438	28.7	3.3569	0.207019579
4/30/2008	250000	25	3.2189	0.026250876	38.4	3.6481	0.026841483
5/31/2008	180000	29	3.3673	0.000184993	38.5	3.6507	0.025996056
6/30/2008	250000	32	3.4657	0.007197632	43.6	3.7751	0.001356745
7/31/2008	230000	42	3.7377	0.127286668	74	4.3041	0.242235175
8/31/2008	240000	37	3.6109	0.052909599	61.5	4.1190	0.094338671
9/30/2008	240000	37	3.6109	0.052909599	64.9	4.1728	0.130289565
10/31/2008	250000	28	3.3322	0.002370963	51.4	3.9396	0.016319298
11/30/2008	250000	28	3.3322	0.002370963	51.8	3.9474	0.018359975
12/31/2008	230000	27	3.2958	0.007235234	42.2	3.7424	0.004826212
1/31/2009	220000	37	3.6109	0.052909599	64.8	4.1713	0.129178738
2/28/2009	230000	30	3.4012	0.000412104	46.6	3.8416	0.000882647
3/31/2009	210000	45	3.8067	0.181276213	66.9	4.2032	0.153121796
4/30/2009	240000	38	3.6376	0.065889301	52.9	3.9684	0.02449606
5/31/2009	220000	17	2.8332	0.299957438	25.5	3.2387	0.328572815

Daily Maximum Limit Derivation		
$u_y = \text{Avg of Nat. Log of daily Discharge (lbs/day)} =$	3.81189	
$s_y = \text{Std Dev. of Nat Log of daily discharge} =$	0.33655	
$S (y_i - u_y)^2 =$	1.81229	
$k = \text{number of daily samples} =$	17	
$s_y^2 = \text{estimated variance} = (S[(y_i - u_y)^2]) / (k-1) =$	0.11327	
Daily Max Limit = exp ($u_y + 2.326*s_y$)		
Daily Max Limit =	98.96	lbs/day
(Log normal distribution, 99th percentile)		
Average Monthly Limit Derivation (for >10 samples)		
Number of samples per month, $n =$	1.00	
$E(x) = \text{Daily Avg} = \exp(u_y + 0.5 s_y^2) =$	47.87173	
$V(x) = \text{Daily Variance} = \exp(2u_y + s_y^2) * [\exp(s_y^2) - 1] =$	274.84817	
$E(Xn) = E(x)$	47.87173	
$V(Xn) = V(x)/n$	274.84817	
Monthly Average Limit = $E(Xn) + 1.645[V(Xn)]^{(1/2)}$		
Monthly Avg Limit =	75.14344	lbs/day
(Log normal distribution, 95th percentile)		

Attachment B: Map of Site and Receiving Water

Australis Aquaculture, LLC
1 Australia Way
Turners Falls, MA 01376



Source: Google Maps

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO
DISCHARGE TO THE WATERS OF THE UNITED STATES

NPDES PERMIT NUMBER: **MA0110264**

NAME AND ADDRESS OF PERMITTEE:

**Australis Aquaculture, LLC
1 Australia Way
Turners Falls, Massachusetts 01376**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Australis Aquaculture, LLC
1 Australia Way
Turners Falls, Massachusetts 01376**

RECEIVING WATER: **Connecticut River (MA 34-02)**

RECEIVING WATER CLASSIFICATION: **B – Warm Water Fishery**

SIC CODE: **0273 Animal Aquaculture**

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1. Proposed Action, Type of Facility, and Discharge Location

Australis Aquaculture, LLC applied to the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated wastewater from the fish production process into the designated receiving water. The current permit was signed in September 2003 and became effective sixty (60) days from the date of issuance. The permit expired in November 2008. EPA received a permit renewal application from Australis Aquaculture, LLC in May 2008. EPA deemed the permit renewal application complete and the current permit has been administratively continued. The permit to be reissued will herein be referred to as the draft permit.

Australis Aquaculture, LLC, located at 1 Australia Way in Turners Falls, MA, breeds and hatches Australian barramundi (*Lates calcarifer*). In May 2004, EPA, in consultation with US Fish and Wildlife Service (USFWS) and Massachusetts Division of Fisheries and Wildlife, authorized the addition of barramundi (*Lates calcarifer*) to the list of species approved for culture at the facility. In addition, in August 2004, EPA acknowledged the transfer of ownership of the NPDES permit MA0110264, issued to Mass Fin Tech, LLC, to Australis Aquaculture, LLC, which will herein be referred to as Australis. Since 2004, Australis has been producing barramundi and discharging treated fish production wastewater, which is processed through the facility's wastewater treatment plant (WWTP) and then discharged through Outfall 002 to the Connecticut River.

2. Description of Discharge

A quantitative description of the effluent parameters based on the permit application and recent Discharge Monitoring Report (DMR) Data from November 2003 through June 2009 is provided in Attachment C: "Discharge Monitoring Report (DMR) Data."

3. Receiving Water Description

The Connecticut River is designated as a Class B warm water body by the Massachusetts Surface Water Quality Standards (314 CMR 4.06). Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated, these waters shall be suitable as a source of public water supply with appropriate treatment. These waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value [314 CMR 4.05(3)(b)]. Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of total maximum daily loads (TMDLs).

The Connecticut River segment receiving the discharge from Australis, MA34-02¹, begins at the Route 10 Bridge in Northfield and ends at the Turners Falls Dam in Gill/Montague. This segment is currently on the "Massachusetts Year 2008 Integrated List of Waters" 303(d) list of

¹ MassDEP's *Connecticut River Watershed 2003 Water Quality Assessment Report* erroneously lists the Australis discharge in Connecticut River segment MA34-03 which begins downstream of the Turners Falls Dam.

impaired waters requiring a TMDL for priority organics (PCBs), flow alteration, and suspended solids.

4. Limitations and Conditions

The effluent limitations of the draft permit, the monitoring requirements, and any implementation schedule (if required) may be found in the draft permit.

5. Permit Basis: Statutory and Regulatory Authority

5.1. General Requirements

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136. When developing the permit limits for this draft permit, EPA considered (a) technology-based requirements, (b) water quality-based requirements, and (c) all limitations and requirements in the current permit.

5.2. Technology-Based Requirements

Subpart A of 40 CFR §125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA.

Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA (see 40 CFR §125 Subpart A) to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control technology (BCT) for conventional pollutants, and best available technology economically available (BAT) for toxic and non-conventional pollutants. In general, technology-based effluent guidelines for non-POTW facilities must have been complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989 (see 40 CFR §125.3(a)(2)).

On August 23, 2004, the EPA promulgated new Effluent Limitations Guidelines and New Source Performance Standards (hereinafter referred to as ELGs) for Concentrated Aquatic Animal Production (CAAP) facilities (See 40 CFR §451). As defined at 40 CFR §122.24 and Appendix C of 40 CFR §122, a CAAP facility is “a hatchery, fish farm, or other facility which meets the criteria in appendix C of this part.” This definition specifically includes facilities that discharge at least 30 days per year, but excludes closed ponds which discharge only during periods of excess runoff and those facilities which produce less than 100,000 lbs of harvestable weight of warm water aquatic animals in a given year (see 40 CFR §122.24 and Appendix C of §122).

Typically, ELGs express effluent limitations in the form of numeric standards for specific pollutants, but this ELG expresses effluent limitations in the form of narrative standards in order to achieve reduced discharges of total suspended solids (TSS) and other materials that are generated during the process of culturing (raising) fish. These new ELGs apply to the discharge of pollutants from facilities that produce 100,000 pounds or more of warm water aquatic animals per year using flow-through, recirculating, net pen or submerged cage systems and became effective on September 22, 2004 (see Federal Register (FR) on August 23, 2004 (69 FR 51892-51930)). Additional information relating to development of the ELGs can be found in “*Technical Development Document for the Final Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (Revised August 2004)*,” EPA 821-R-04-01; and “*Economic and Environmental Benefits Analysis of the Final Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Industry Point Source Category*,” June 2004 (EPA-821-R-04-013).

EPA has determined that Australis meets the definition of a CAAP at 40 CFR §122.24(b). Australis operates recirculating systems, independent of runoff conditions, and anticipates producing more than 100,000 pounds of aquatic animals per year. Therefore, EPA has determined that Australis is subject to promulgated ELGs found at 40 CFR §451.

Accordingly, the general reporting requirements detailed in 40 CFR §451.3 have been incorporated into the draft permit. They require the permittee to report drug usage, spills, structural failure and/or damage to rearing units as well as to develop, implement and maintain a best management practices (BMP) plan for the facility. The BMPs must address solids control, biological control, materials storage, structural maintenance of culture units and related equipment, recordkeeping and training at the facility. BMP plan requirements must represent best practicable control technology currently available, best available technology economically achievable, and best conventional technology as applicable and the permitting authority can modify BMP requirements based on its exercise of best professional judgment (BPJ) (See 40 CFR Parts 451.11, 451.12, and 451.13).

5.3. Water Quality-Based Requirement

Section 301(b)(1)(C) of the CWA requires that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when technology-based limitations would not attain or maintain the water quality of the receiving water.

Under Section 301(b)(1)(C) of the CWA and EPA regulations, NPDES permits must contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water quality standards.

Water quality standards consist of three parts: (1) beneficial designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards,

found at 314 CMR 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless site specific criteria are established.

The draft permit limits any pollutant or pollutant parameter (conventional, non-conventional, and toxic) that is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to an excursion above any water quality standard (40 CFR §122.44(d)). An excursion occurs if the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining "reasonable potential," EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from the permittee's reissuance application, monthly Discharge Monitoring Report (DMR) Data, and State and Federal Water Quality Reports; (3) sensitivity of the indicator species used in toxicity testing; (4) known water quality impacts of processes on waste waters; and (5) where appropriate, dilution of the effluent in the receiving water.

5.4. Antibacksliding

Antibacksliding, as defined in Section 402(o) of the Clean Water Act and 40 CFR §122.44(1)(1), requires reissued permits to contain limitations as stringent as or more stringent than those of the previous permit unless the circumstances allow application of one of the defined exceptions to this regulation. As none of these exceptions apply to this facility, the limits in the draft permit are at least as stringent as those in the existing permit.

5.5. Antidegradation

The Commonwealth of Massachusetts' antidegradation provisions found in 314 CMR 4.04 ensure that provisions in 40 CFR §131.12 are met. These provisions ensure that all existing uses in the receiving water, along with the level of water quality necessary to protect those existing uses, are maintained and protected. The effluent limits in the draft permit should ensure that provisions in 314 CMR 4.04 are met. The State is also asked to certify that the anti-degradation provisions in State law are met.

6. Explanation of the Permit's Effluent Limitations

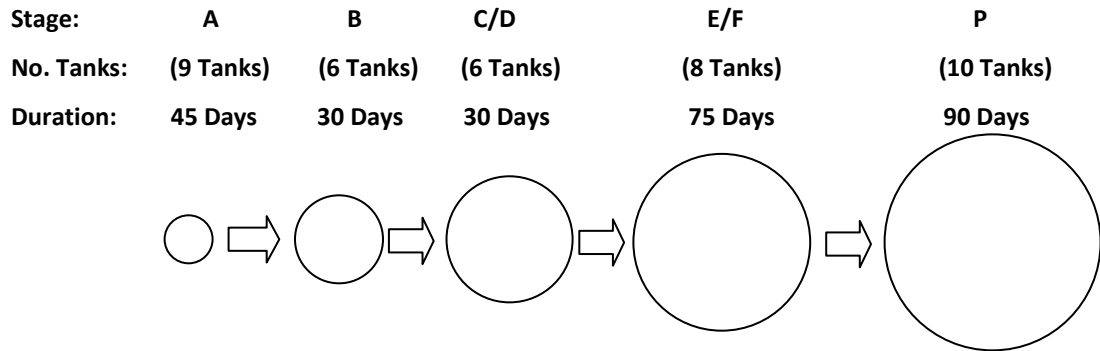
6.1. Facility Information

Australis produces Australian barramundi (*Lates calcarifer*) at its facility located at 1 Australia Way off Industrial Boulevard in the Airport Industrial Boulevard Park in Turners Falls, Massachusetts. A map of the facility is provided in Attachment A: "Map of Site and Receiving Water." The fish production process at Australis consists of fish growing tanks, as well as killing, packing, and distributing facilities. Australis also owns and operates a fish hatchery on the east side of Industrial Boulevard, where fingerlings are produced. All of the wastewater from the hatchery discharges to the Montague WWTP.

Fingerlings (juvenile fish weighing about 0.2 grams) are brought from the hatchery to the fish farm to grow into marketable fish. The fish are raised for about nine months to a size of 1 to 1.5 pounds, and are then harvested and sold to restaurants and other seafood distributors. The farm

raises and sells approximately 1,000,000 barramundi fish each year. The fish are tropical and cannot survive in northeastern waters. Furthermore, barramundi require tropical seawater to spawn and survive as juveniles, but larger barramundi are able to live in either fresh or salt water. Barramundi are also hermaphroditic, thus only male fish are produced at Australis’ farm. In addition, the fish eat a formulated feed consisting of 75% grain-based ingredients and 25% fish meal and oils.

Australis uses a recirculating aquaculture system (RAS) to produce fish for market. The system is housed in a building west of Industrial Boulevard. The building houses five discrete production stages, providing fish with larger tanks as they grow, as shown below:



Stage A is the “nursery,” where fish live for about six months, are frequently graded, and grow to about 0.5 pounds. Stages B, C/D and E/F are the “grow-out” sections of the process during which fish stay in a larger tank until they are harvested at about 1.5 pounds. During Stage P, the fish remain in clean water for three or four days. For harvest, the fish are chill-killed,² then placed in a refrigerator, and ice-packed in Styrofoam containers for shipping.

The facility houses a total of thirty nine culture tanks and sixteen recirculating filtration systems, as shown below:

	No. Culture Tanks	Tank Volume (Gallons)	Total Culture Volume (Gallons)	No. RAS Filtration Systems	Flow/Treatment System (GPM)	Total Recirculating Flow (MGD)
Nursery A	9	1,000	9,000	1	500	0.7
Nursery B	6	11,000	66,000	1	2,000	2.9
Nursery C/D	6	30,000	180,000	2	2,000	5.8
Nursery E/F	8	80,000	640,000	2	6,000	17.3
Grow-Out Systems	10	140,000	1,400,000	10	2,000	28.8
Total	39		2,295,000	16		55.4

² In the “chill-kill” process fish are put into ice cold water to reduce their body temperature from 80 to 32 °F without freezing.

The culture tanks are cylindrical, which allows them to continually self-clean. Except for any process water that collects in a central trench drain from overflow or splash out of the tanks, filters or fish handling equipment or from general wash down of the tanks, the majority of process water leaves the culture tanks via a central sump at the bottom of each tank as well as through a screened exit at the perimeter of the tank. Fecal solids are removed via a microscreen drum filter and the process water is then pumped from a sump below the microscreen into a fluidized bed biofilter with nitrifying bacteria. The process water then flows to a degassing system where carbon dioxide is removed, and oxygen and ozone are then added via a down-hole bubble contactor, prior to returning to the culture tanks.

The intake water used in the fish farming process comes from three artesian rock wells, each greater than 500-feet deep. Well water enters the building through a regenerative heat exchanger, which functions to recover the latent heat in the discharge water by warming the incoming makeup water. No other treatment or chemicals are added to the well water prior to use. After passing through the heat exchanger, well water enters each of the culture systems. Approximately 10 gallons per minute (GPM) well water feeds into each of the systems. The RAS is illustrated in Attachment B: “Map of Water Flow at Site.”

Process water that is not recycled through the RAS instead passes through the second major treatment system at the facility, the wastewater treatment system (WWTS), and then discharges to the Connecticut River, also shown in Attachment B. Screened overflow from the tanks and process microscreen backwash water are treated in the WWTS prior to discharge to the receiving water. Wastewater enters the facility’s WWTS via two principal sources. Relatively higher strength microscreen rinse water enters the WWTS via the bar rack whereas the rest of the process water from the RAS flows from the tanks, as earlier described. The wastewater then flows to three primary settling tanks. Then the wastewater is recombined and flows to the primary biofilter, which contains submerged plastic media. The outflow from the primary biofilter splits and flows to two secondary biofilters, which also consist of submerged media. The biofilters typically agitate with oxygen every ten minutes. In addition, bypasses for all biofilters exist in case of a pipe breakage or other emergency. The wastewater is again recombined and flows to a microscreen filter, equipped with forty-micron screens, for polishing. Screened overflow water from the culture tanks is combined with the treated microscreen water before being ozonated. A Venturi injector adds ozone to the water prior to entering the ozone contact chamber. The treated wastewater then moves through a flow meter before discharging to the Connecticut River. After treatment, about two thirds of the treated wastewater is returned to the fish farm for reuse. Solids captured from the primary settling tanks and during periodic maintenance of the WWTS’ biofilters are pumped to a 180,000-gallon outdoor storage tank. Supernatant from the storage tank is used as a carbon source for a denitrification system that Australis uses to remove nitrate from the culture water.

6.2. Permitted Outfall

In 2003, the former outfall at the facility, Outfall 001, was extended to create a new outfall location designated as Outfall 002. Outfall 001 no longer exists. Australis discharges treated wastewater from the fish production process through Outfall 002 to the Connecticut River, as pictured in Attachment A: “Map of Site and Receiving Water.” Outfall 002 crosses the Connecticut River backwater known as the “deep hole” (formerly the Outfall 001 location) and discharges directly into the Connecticut River. The discharge pipe for Outfall 002 is buried

beneath the “deep hole” and the outfall discharges to the Connecticut River approximately 1000 feet from the shore and approximately twenty five feet below the water surface.

6.3. Derivation of Effluent Limits

A. Flow

The draft permit retains the average monthly and maximum daily flow limits of both 0.3 million gallons per day (MGD) stated in the current permit. Since the current permit was issued in 2003, Australis has expanded their operations. Through water reclamation and reuse practices, discharges have remained below permit limits. Average monthly flows reported in DMR data from November 2003 through June 2009, provided in Attachment C, reflect the recent expansion and range from 0.01 to 0.22 MGD. Daily maximum flow for the same period ranged from 0.02 to 0.28 MGD. Based on DMR data and antibacksliding requirements (40 CFR §122.44(1)), the draft permit maintains the flow limits stated in the current permit.

B. Dilution Factor

Water quality-based limits are established with the use of a calculated available dilution. The effluent dilution is calculated using the receiving water 7Q10 in accordance with 314 CMR 4.03(3)(a). The 7Q10 is the lowest observed mean river flow for seven consecutive days, occurring over a ten-year recurrence interval. Using streamflow data from 1905 to 2008³, 7Q10 low flow was calculated at the Montague City gauging station (01170500) using DFLOW 3.1b software⁴. The 7Q10 low flow at station 01170500 is 1,760 cubic feet per second (cfs). Furthermore, the Connecticut River drainage area upstream of gauging station 01170500 is 7,860 square miles. The drainage area upstream of Outfall 002 is 7,160 square miles⁵. Assuming a proportional relationship between flow and drainage area, the 7Q10 low flow for the Connecticut River at Outfall 002 was calculated as follows:

$$7Q10 \text{ (Outfall 002)} = 1,760 \text{ cfs} * (7,160 \text{ square miles} / 7,860 \text{ square miles}) = 1,603 \text{ cfs}$$

The effluent dilution is calculated using the design flow of the facility. The facility design flow is 0.3 million gallons per day (MGD), which is equal to 0.464 cubic feet per second (cfs). EPA calculated the dilution factor for the discharge from the Outfall 001 using both the 7Q10 and the design flow as follows:

$$\text{Dilution Factor} = \frac{\text{Design Flow} + \text{River Flow (7Q10)}}{\text{Design Flow}} = \frac{0.464 \text{ cfs} + 1603 \text{ cfs}}{0.464 \text{ cfs}} = 3,456$$

The dilution factor of 3,456 is used to calculate effluent limits such as the limit for total residual chlorine (TRC) concentration in the discharge, later described in the fact sheet.

³ downloaded from USGS Streamstats website at <http://ma.water.usgs.gov/water/default.htm>

⁴ DFLOW 3.1 (released March 2006) is a Windows-based tool developed to estimate user selected design stream flows for low flow analysis and water quality standards. It was downloaded from the EPA website at <http://www.epa.gov/waterscience/models/dflow/>.

⁵ Used USGS drainage area calculation tool at <http://streamstatsags.cr.usgs.gov>

C. Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS)

An excess of oxygen-demanding substances (measured as BOD₅) can cause depletion of the instream dissolved oxygen levels thereby causing harm to aquatic life. TSS discharged to receiving water increases turbidity, contributes to oxygen depletion and may contain toxic agricultural and/or industrial compounds such as pesticides and heavy metals.

The current permit contained average monthly and maximum daily effluent limitations for BOD and TSS based on Best Professional Judgment (BPJ). BOD and TSS levels at the facility have increased in 2008 because of increased production, but the facility has added a third settler and expanded its denitrification system.

The draft permit includes a BOD₅ average monthly effluent concentration limit equal to 40 mg/L and a BOD₅ maximum daily effluent concentration limit equal to 80 mg/l, the same limits stated in the current permit. Monthly monitoring for effluent BOD₅ reported in Australis monthly DMR data for the period from January 2008 through June 2009, provided in Attachment C, show that the average monthly BOD₅ concentration ranged from 12.1 mg/l to 37.7 mg/l and the maximum daily BOD₅ concentration ranged from 14.7 mg/l to 38.4 mg/l.

In addition, the draft permit includes a TSS average monthly effluent concentration limit equal to 30 mg/L and a TSS maximum daily effluent concentration limit equal to 50 mg/l, the same limits stated in the current permit. Monthly monitoring for effluent TSS reported in Australis monthly DMR data for the period from January 2008 through June 2009, provided in Attachment C, show that the average monthly TSS concentration ranged from 11 mg/l to 30 mg/l and the maximum daily TSS concentration ranged from 17 mg/l to 45 mg/l.

There were no effluent limit guidelines (ELGs) applicable to this facility when the current permit was issued in September 2003. The 2004 EPA-promulgated technology-based ELGs applicable to aquaculture facilities, as described above, include narrative requirements to implement BMPs that minimize BOD₅ and TSS discharges through proper feed management and management of solids. These BMP requirements are included in the draft permit. Although concentration or loading limits for these pollutants are not included in the ELGs, average monthly and maximum daily concentration limits for both BOD₅ and TSS contained in the current permit have been carried forward into the draft permit in accordance with the antibacksliding requirements found in 40 CFR §122.44(1).

D. pH

The draft permit retains the pH range limit of 6.5 to 8.3 standard units (SU) stated in the current permit. The Massachusetts Surface Water Quality Standards, 314 CMR 4.00, for Class B waters require pH to be within the range of 6.5 to 8.3 standard units (SU) and prohibit discharges that cause the instream pH to change more than 0.5 units outside of the background range. DMR data from November 2003 through June 2009 indicates that pH levels have ranged between 6.76 and 7.35 SU. Based on DMR data and antibacksliding requirements (40 CFR §122.44(1)), the draft permit maintains the pH range limit stated in the current permit.

E. Dissolved Oxygen (DO)

The Massachusetts Surface Water Quality Standards at 314 CMR 4.05 3(b)(1) state that for Class B warm water fisheries, the dissolved oxygen (DO) concentration shall not be less than 5.0 mg/L in warm water fisheries. The current permit, however, has a limit of 6.0 mg/L. Therefore, based

on antibacksliding requirements (40 CFR §122.44(1)), the draft permit requires the effluent DO to be greater than or equal to 6.0 mg/L.

F. Nitrogen

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see table below). The estimated current point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Basin	Baseline Loading ¹ lbs/day	TMDL Target ² lbs/day	Current Loading ³ lbs/day
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP “Report on Nitrogen Loads to Long Island Sound”, April 1998)
2. Reduction of 25% from baseline loading
3. Estimated current loading from 2004 – 2005 DMR data – detailed summary attached as Attachment D.

The TMDL target of a 25% aggregate reduction from baseline loadings is currently being met, and the overall loading from MA, NH and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36%.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25% reduction over baseline loadings, EPA intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25% reduction is maintained. Such a requirement has been included in this permit. EPA also intends

to work with the State of Vermont to ensure that similar requirements are included in its discharge permits.

Specifically, the permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and MassDEP within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual mean average total Kjeldahl nitrogen (TKN) load from this facility (2008-2009) is estimated to be 4.92 lb/day, as calculated from the data provided below:

Date	TKN (lb/day)
January 2008	1.6
February 2008	6.1
March 2008	4.2
April 2008	3.0
May 2008	0.2
June 2008	0.6
July 2008	2.9
August 2008	0.3
September 2008	9.5
October 2008	7.5
November 2008	19.3
December 2008	11.5
January 2009	2.7
February 2009	3.9
March 2009	5.9
April 2009	3.0
May 2009	4.0
June 2009	5.5
July 2009	1.7
Average (mean)	4.92

The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

The agencies will annually update the estimate of all out-of-basin total nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is strongly recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

G. Phosphorus

The draft permit includes monthly sampling requirements for total phosphorus, as required in the current permit. DMR data indicate a monthly average phosphorus concentration of 2.2 mg/l and a daily maximum phosphorus concentration of 12.0 mg/l. Specific phosphorus limits have not been required in the draft permit based on the physical characteristics of the receiving water at the discharge, the receiving water's assimilative capacity, the very minor level of additional nutrients entering the Connecticut River (compared to all other existing contributive inputs such as POTW dischargers and non point sources), and the requirement in the draft permit that the permittee prepare and implement a Best Management Practices (BMP) plan to minimize pollutants in the discharge. Furthermore, the Phosphorus Evaluation and Loading Analysis study submitted by Australis to EPA in June 2007, as required during the term of the current permit, describes how the recirculation treatment system at the facility optimizes the removal of phosphorus to the receiving water and describes practices that will maintain such removal. Thus, the draft permit requires monitoring only. If a Total Maximum Daily Load (TMDL) or other data show that the facility is contributing to eutrophication of the river, EPA and MassDEP may exercise the reopener clause in Part II.A.4 of the permit and modify the permit accordingly.

H. Total Residual Chlorine (TRC)

A minor amount of chlorine is introduced to the discharge at Australis. The fish production tanks are typically disinfected with chlorine at an average of one tank every six months. Prior to chlorine addition, the tank and associated life support system connections to the effluent collection systems are closed. A 25 mg/l sodium hypochlorite solution is added to the tank(s) and the system is circulated to distribute the chlorine throughout the system. Sodium thiosulfate is then added to the tank(s) to neutralize the chlorine and the chlorine level is tested to assure that the chlorine residual is less than 0.08 mg/l before reconnecting the tank(s) to the effluent treatment system.

Chlorine and chlorine compounds can be extremely toxic to aquatic life. Ambient receiving water limits for maximum daily and average monthly total residual chlorine (TRC) are based on the acute and chronic values defined in *EPA Quality Criteria for Water 1986 (EPA 440/5-86-001)* and *National Recommended Water Quality Criteria*, published in the Federal Register on December 10, 1998 (63 FR 68354), as adapted into the Massachusetts Surface Water Quality Standards (314 CMR 4.00). This guidance specifies that the average TRC in freshwater should

not exceed 11 micrograms per liter (ug/l) to protect aquatic life from chronic toxicity, and the maximum daily concentration should not exceed 19 ug/l for acute toxicity. TRC effluent limits are calculated by multiplying the chlorine criteria by the dilution factor. Because the dilution factor for this proposed discharge is 3,456 (as previously calculated) the resulting calculated TRC limit is considerably greater than 1.0 mg/l. However, the draft permit chlorine limit has been set lower to be consistent with the *Massachusetts Implementation Policy for the Control of Toxic Pollutants in Surface Waters*, MassDEP, 1990. This policy requires that receiving waters shall be protected from unnecessary discharges of excess chlorine. In receiving waters with dilution factors greater than 100, the maximum permissible effluent concentration of chlorine shall not exceed 1.0 mg/l TRC. Therefore, based on the facility's occasional use of chlorine containing cleaning products at the facility, the draft permit has specified effluent TRC limits of 1.0 mg/l for both maximum daily and monthly average, with sampling required during major cleaning events.

I. Ozone

The draft permit retains the average monthly and maximum daily ozone concentration minimum limit of 0.02 mg/l stated in the fact sheet for the current permit. The limit is based on a recommendation from Gary A. Wedemeyer, Ph.D., formerly a member of the United States Department of the Interior, National Biological Service. In the current permit, Dr. Wedemeyer supported that the facility should be able to achieve the same level of disinfection in the effluent with an ozone residual of at least 0.02 mg/l after a sixty second retention time. As explained in the fact sheet for the current permit,

In a letter dated January 3, 1997, Dr. Wedemeyer indicated that the background information available to him at the time was probably inadequate to make an appropriate recommendation. The 0.35 mg/l has been used as a standard for disease containment at biohazard facilities but is probably overzealous for general disinfection of effluent from a fish culture facility that is not a source of exotic pathogens. Based on current information, it is Dr. Wedemeyer's opinion that the facility should be able to achieve the same level of treatment with an ozone residual of >0.02 mg/l after a 60 second retention time. Given this information and recent conversations with Dr. Wedemeyer, the minimum ozone limit shall be changed to 0.02 mg/l after a 60 second retention time.

Therefore, based on Dr. Wedemeyer's evaluation and antibacksliding requirements (40 CFR §122.44(1)), the draft permit maintains the minimum ozone limit of 0.02 mg/l.

J. Formaldehyde

In comments submitted by Australis on June 19, 2002, during the previous public notice period, the permittee proposed that the formaldehyde limit and whole effluent toxicity (WET) testing requirement should be eliminated because the permittee will not discharge any formaldehyde through its treatment system. EPA has removed both requirements from the draft permit. If the permittee determines that formaldehyde will be used and discharged via the treatment facility, EPA must be notified and the previously proposed limits may be adopted.

K. Best Management Practices (BMP) Plan

The ELGs contained in 40 CFR §451.11 are narrative limitations that describe Best Management

Practices (BMPs) to which the facility must adhere. These practices require the permittee to develop and employ methods for feed management, removal of accumulated solids, storage of drugs and pesticides, spill prevention, management of the wastewater treatment system, maintaining accurate records, and ensuring that all personnel receive proper training.

7. Essential Fish Habitat (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C §1801 *et seq.*(1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's actions or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," 16 U.S.C. §1855(b). The Amendments broadly define "essential fish habitats" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," 16 U.S.C. §1802(10). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH, 50 C.F.R. §600.910(a). "Adverse effects" may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential Fish Habitat is only designated for fish species for which federal Fisheries Management Plans exist. 16 U.S.C. §1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

Anadromous Atlantic Salmon (*Salmo salar*) is the only managed species with designated EFH within this section of the Connecticut River, which is classified by the State as a warm water fishery.

EPA has concluded that the limits and conditions contained in this draft permit minimize adverse effects to Atlantic salmon EFH for the following reasons:

- The design flow of the facility is 0.464 MGD and the dilution factor is 3,456; and
- The permit will prohibit violations of the state water quality standards.

EPA believes the draft permit adequately protects Atlantic Salmon EFH, and therefore additional mitigation is not warranted. NMFS will be notified and an EFH consultation will be reinitiated if adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions.

8. Endangered Species Act (ESA)

Section 7 of the Endangered Species Act of 1973, as amended ("Act") grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical ("A critical habitat"). The Act requires every Federal agency, in consultation with and with the assistance of the Secretary of the Interior, to ensure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or results in the destruction or adverse modification of critical habitat. The National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. EPA has initiated informal

consultation with both NOAA Fisheries and USFWS concerning listed species under their purviews. Listed species in the Franklin County area include shortnose sturgeon (*Acipenser brevirostrom*) for NOAA Fisheries and the dwarf wedge mussel (*Alasmidonta heterodon*) for USFWS.

EPA believes the authorized discharge from this facility is not likely to adversely affect any threatened or endangered species or its critical habitat. This preliminary determination is based on the location of the outfall and the reasons provided in the EFH discussion (Section 7 of this Fact Sheet). If adverse effects do occur as a result of this permit action, or if new information becomes available that changes the basis for this conclusion, then EPA will notify and consultation promptly initiated with both the United States Fish and Wildlife Service and National Marine Fisheries Service.

9. Monitoring

The permittee is required to monitor and report sampling results to EPA and the MassDEP within the time specified within the permit. Timely reporting is essential for the regulatory agencies to expeditiously assess compliance with permit conditions.

10. State Certification Requirements

EPA may not issue a permit unless the State of Massachusetts Department of Environmental Protection with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the State of Massachusetts Department of Environmental Protection has reviewed the draft permit, and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR §124.53 and expects that the draft permit will be certified.

11. Public Comment Period and Procedure for Final Decision

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to Jessica Hing U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch - CIP, 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 CFR §24.12 are satisfied. In reaching a final decision on the draft permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office and the EPA website at:

http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 CFR §124.19.

12. EPA and MassDEP Contact

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Jessica Hing
Industrial Permits Branch
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Boston, MA 02109 (OEP06-4)
Telephone: (617) 918-1560
Fax: (617) 918-0560
Email: hing.jessica@epa.gov

Kathleen Keohane, Massachusetts Department of Environmental Protection
Division of Watershed Management, Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, MA 01608
Telephone: (508) 767-2796
Fax: (508) 791-4131
Email: kathleen.keohane@state.ma.us

Date

Stephen Perkins, Director*
Office of Ecosystem Protection
U.S. Environmental Protection Agency
Boston, MA

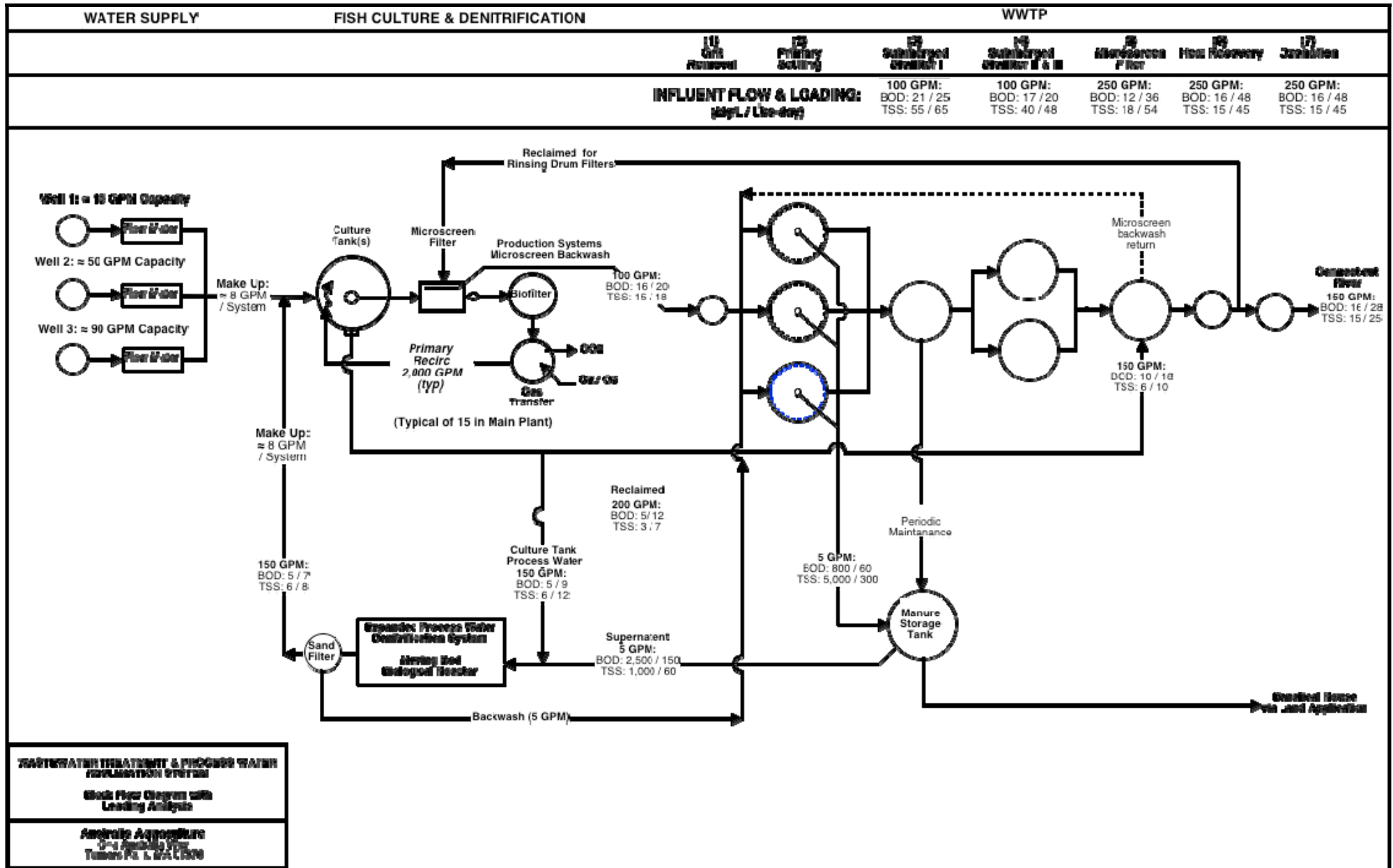
* Please address comments to both Ms. Jessica Hing and Ms. Kathleen Keohane

13. Attachments

- 13.1. Attachment A: Map of Site and Receiving Water**
- 13.2. Attachment B: Map of Water Flow at Site**
- 13.3. Attachment C: Discharge Monitoring Report (DMR) Data**
- 13.4. Attachment D: Nitrogen Loads**

Attachment A: Map of Site and Receiving Water
Australis Aquaculture, LLC





WASTEWATER TREATMENT & PROCESS WATER RECLAMATION SYSTEM

Block Flow Diagram with Loading Analysis

Ameyco Agriculture
3-4 Avenida 5ta
Turkey P.O. Box 1570

Attachment C
Australis Aquaculture, LLC (MA0110264)
Outfall 002A- DMR Data Summary
November 2003 – April 2009
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MONITORING PERIOD END DATE	Flow (Mgal/d)		Total Suspended Solids (TSS) (mg/l)		Total Suspended Solids (TSS) (lb/d)		Oxygen, dissolved (DO) (mg/L)
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Minimum
11/30/2003	0.07	0.04	13	11	7.4	3.6	25.2
12/31/2003	-	-	5	5	4.0	2.2	23.8
1/31/2004	0.06	0.05	8	6	4.0	2.5	26.6
2/29/2004	0.08	0.06	5	5	3.2	2.3	27.9
3/31/2004	0.07	0.03	5	5	1.8	1.2	29.1
4/30/2004	0.04	0.03	5	5	1.5	1.1	29.9
5/31/2004	0.04	0.03	5	5	1.8	1.2	28.2
6/30/2004	0.04	0.03	5	5	1.5	1.2	31.1
7/31/2004	0.04	0.02	5	5	-	1.5	27.7
8/31/2004	0.02	0.02	5	5	0.8	0.7	34.9
9/30/2004	0.05	0.01	12	7	4.5	0.6	29.0
10/31/2004	0.09	0.04	8	6	5.3	1.7	32.8
11/30/2004	0.08	0.03	12	7	7.1	1.3	31.0
12/31/2004	0.10	0.02	19	11	15.5	1.8	29.1
1/31/2005	0.09	0.03	13	10	9.7	2.1	28.1
2/28/2005	0.03	0.02	17	11	3.6	1.8	26.6
3/31/2005	0.05	0.02	8	6	2.8	0.6	29.6
4/30/2005	0.07	0.02	14	7	6.8	0.9	28.3
5/31/2005	0.18	0.14	11	7	14.8	7.5	2.5
6/30/2005	0.28	0.13	19	14	44.3	15.1	29.1
7/31/2005	0.16	0.10	9	8	10.7	5.9	15.9
8/31/2005	0.27	0.11	18	10	15.7	9.0	17.6
9/30/2005	0.15	0.11	13	10	16.2	8.7	22.6
10/31/2005	0.16	0.09	17	11	22.6	8.6	25.3
11/30/2005	0.16	0.10	11	10	14.6	8.1	24.4
12/31/2005	0.16	0.11	25	13	33.3	11.4	17.1
1/31/2006	0.15	0.10	9	8	11.2	6.4	20.1
2/28/2006	0.14	0.11	13	9	15.1	7.8	20.1
3/31/2006	0.19	0.11	20	18	31.6	16.5	20.2
4/30/2006	0.14	0.11	21	15	25.4	15.0	12.6
5/31/2006	-	-	-	-	16.2	9.5	22.1
6/30/2006	0.14	0.10	19	11	19.2	11.2	9.5
7/31/2006	0.16	0.12	15	11	15.1	10.7	15.7
8/31/2006	0.15	0.11	18	11	13.9	9.0	9.0
9/30/2006	0.15	0.12	21	18	21.1	18.0	15.0
10/31/2006	0.14	0.11	7	6	6.6	5.5	20.0
11/30/2006	0.16	0.09	17	10	13.7	8.3	17.6
12/31/2006	0.11	0.09	14	10	12.4	7.4	19.1
1/31/2007	0.11	0.09	29	13	24.1	10.4	20.0
2/28/2007	0.11	0.09	21	15	18.0	10.9	20.0

Attachment C
Australis Aquaculture, LLC (MA0110264)
Outfall 002A- DMR Data Summary
November 2003 – April 2009
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MONITORING PERIOD END DATE	Flow (Mgal/d)		Total Suspended Solids (TSS) (mg/l)		Total Suspended Solids (TSS) (lb/d)		Oxygen, dissolved (DO) (mg/L)
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Minimum
3/31/2007	0.14	0.08	19	13	15.9	9.7 lb/d	20.0
4/30/2007	0.10	0.09	20	13	15.2	9.4	20.0
5/31/2007	0.12	0.08	12	8	9.6	5.4	20.0
6/30/2007	0.11	0.09	21	18	15.6	11.5	21.6
7/31/2007	0.10	0.08	25	16	15.3	9.8	20.4
8/31/2007	0.16	0.11	26	17	23.2	15.6	18.6
9/30/2007	0.12	0.08	72	31	37.7	19.5	16.0
10/31/2007	0.14	0.06	45	28	35.4	16.6	20.0
11/30/2007	0.12	0.10	32	19	27.1	16.0	20.0
12/31/2007	0.13	0.10	27	20	28.1	14.0	19.8
1/31/2008	0.13	0.10	33	16	27.8	13.9	20.0
2/29/2008	0.25	0.19	18	11	29.9	16.9	20.0
3/31/2008	0.23	0.20	17	12	28.7	19.7	20.0
4/30/2008	0.25	0.20	25	18	38.4	25.3	19.0
5/31/2008	0.18	0.13	29	22	38.5	28.0	20.0
6/30/2008	0.25	0.17	32	21	43.6	27.4	14.5
7/31/2008	0.23	0.21	42	27	74.0	45.7	14.6
8/31/2008	0.24	0.20	37	26	61.5	44.4	16.9
9/30/2008	0.24	0.21	37	27	64.9	45.9	18.5
10/31/2008	0.25	0.22	28	22	51.4	39.6	18.4
11/30/2008	0.25	0.21	28	23	51.8	42.0	20.0
12/31/2008	0.23	0.20	27	20	42.2	33.4	20.0
1/31/2009	0.22	0.20	37	23	64.8	39.6	20.0
2/28/2009	0.23	0.20	30	22	46.6	36.1	20.7
3/31/2009	0.21	0.19	45	30	66.9	45.5	20.0
4/30/2009	0.24	0.18	38	20	52.9	29.4	20.0
5/31/2009	0.22	0.17	17	14	25.5	21.2	20.0
6/30/2009	0.20	0.17	25	19	33.6	25.4	20.0

2003 Permit Limits	Flow (Mgal/d)		Total Suspended Solids (TSS) (mg/l)		Total Suspended Solids (TSS) (lb/d)		Oxygen, dissolved (DO) (mg/L)
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Minimum
	0.3	0.3	50	30	125	75	6
Minimum	0.02	0.01	5	5	0.8	0.6	2.5
Maximum	0.28	0.22	72	31	74.0	45.9	34.9
Average	0.15	0.11	20	14	23.3	14.1	21.4
Standard Deviation	0.07	0.06	12	7	18.5	13.1	5.9
# Measurements	66	66	67	67	67	67	68
# Exceeds Limits	0	0	1	1	0	0	1

Attachment C
Australis Aquaculture, LLC (MA0110264)
Outfall 002A- DMR Data Summary
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MONITORING PERIOD END DATE	pH (s.u.)		Nitrogen, ammonia total (as N) (mg/L)		Nitrite plus nitrate total 1 det. (as N) (mg/L)		Nitrogen, Kjeldahl, total (TKN) (water) (mg/L)	
	Minimum	Maximum	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average
11/30/2003	7.31	7.35	0.42	0.42	24.8	24.8	1.07	1.07
12/31/2003	7.20	7.20	0.56	0.56	29.9	29.9	-	-
1/31/2004	7.02	7.02	0.05	0.05	1.1	1.1	0.20	0.20
2/29/2004	7.20	7.20	0.20	0.20	49.0	49.0	0.20	0.20
3/31/2004	6.90	6.90	0.35	0.35	51.6	51.6	0.20	0.20
4/30/2004	7.11	7.11	0.42	0.42	37.6	37.6	0.20	0.20
5/31/2004	7.10	7.10	0.35	0.35	3.9	3.9	0.49	0.49
6/30/2004	7.20	7.20	0.56	0.56	17.1	17.1	1.40	1.40
7/31/2004	7.20	7.20	0.20	0.20	14.2	14.2	0.28	0.28
8/31/2004	7.10	7.10	0.35	0.35	14.1	14.1	0.35	0.35
9/30/2004	7.18	7.18	0.35	0.35	14.7	14.7	0.44	0.44
10/31/2004	7.10	7.10	0.49	0.49	9.8	9.8	0.91	0.91
11/30/2004	7.17	7.17	0.70	0.70	9.4	9.4	1.33	1.33
12/31/2004	7.24	7.24	0.21	0.21	32.0	32.0	0.96	0.96
1/31/2005	7.07	7.07	1.89	1.89	35.0	35.0	2.73	2.73
2/28/2005	7.07	7.07	1.75	1.75	91.3	91.3	1.96	1.96
3/31/2005	7.21	7.21	2.03	2.03	65.9	-	2.10	-
4/30/2005	7.18	7.18	0.91	0.91	85.8	-	1.47	1.47
5/31/2005	7.15	7.15	0.77	0.77	52.0	-	0.20	0.20
6/30/2005	7.11	7.11	0.84	-	44.2	-	1.33	-
7/31/2005	7.08	7.08	1.26	1.26	46.7	-	1.12	1.12
8/31/2005	6.85	6.85	0.28	0.28	49.2	-	0.20	0.20
9/30/2005	6.82	6.82	0.63	-	55.8	-	0.21	-
10/31/2005	6.95	6.95	0.20	0.20	57.9	-	0.20	0.20
11/30/2005	6.93	6.98	0.91	0.91	78.9	-	0.84	0.84
12/31/2005	6.93	7.01	1.50	1.00	66.7	-	3.40	-
1/31/2006	6.84	6.98	2.17	2.17	85.5	-	1.60	-
2/28/2006	6.85	7.11	1.96	1.96	83.6	-	1.60	1.60
3/31/2006	6.76	7.00	1.50	1.50	79.7	79.7	1.60	1.60
4/30/2006	6.80	7.06	0.91	0.91	74.2	-	0.20	0.20
5/31/2006	-	7.03	0.84	0.84	64.1	64.1	1.30	1.30
6/30/2006	6.90	-	0.61	0.61	81.4	81.4	0.20	0.20
7/31/2006	6.94	7.13	0.49	0.49	66.5	66.5	0.20	0.20
8/31/2006	6.90	7.10	0.84	0.84	79.2	79.2	0.21	0.21
9/30/2006	6.79	7.17	0.70	0.70	62.9	62.9	0.21	0.21
10/31/2006	6.94	7.06	-	-	85.9	85.9	-	-
11/30/2006	6.91	6.91	1.30	-	-	-	2.60	-
12/31/2006	6.98	6.98	4.20	4.20	85.9	85.9	4.20	4.20
1/31/2007	7.00	7.00	0.70	0.70	98.0	98.0	1.33	1.33
2/28/2007	6.88	6.88	1.54	1.54	71.4	71.4	9.52	9.52

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MONITORING PERIOD END DATE	pH (s.u.)		Nitrogen, ammonia total (as N) (mg/L)		Nitrite plus nitrate total 1 det. (as N) (mg/L)		Nitrogen, Kjeldahl, total (TKN) (water) (mg/L)	
	Minimum	Maximum	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average
3/31/2007	6.93	6.93	1.54	1.54	63.4	63.4	2.45	2.45
4/30/2007	7.01	7.01	0.91	0.91	73.1	73.1	1.89	1.89
5/31/2007	6.97	6.97	0.98	0.98	85.5	85.5	1.66	1.66
6/30/2007	7.03	7.03	0.84	0.84	109.0	109.0	1.54	1.54
7/31/2007	7.14	7.14	0.28	0.28	110.0	110.0	0.84	0.84
8/31/2007	7.22	7.22	1.05	1.05	98.5	98.5	2.24	2.24
9/30/2007	7.18	7.18	1.50	1.50	95.8	95.8	4.50	4.50
10/31/2007	7.21	7.21	1.26	1.26	145.0	145.0	2.59	2.59
11/30/2007	6.87	6.87	1.54	1.54	135.0	135.0	2.38	2.38
12/31/2007	7.11	7.11	1.33	1.33	141.5	141.5	0.70	0.70
1/31/2008	7.02	7.02	0.84	0.84	124.5	124.5	1.89	1.89
2/29/2008	7.08	7.08	2.66	2.66	93.0	93.0	3.85	3.85
3/31/2008	7.12	7.12	1.54	1.54	80.4	80.4	2.52	2.52
4/30/2008	7.30	7.30	1.33	1.33	87.0	87.0	1.82	1.82
5/31/2008	7.14	7.14	0.91	0.91	96.5	96.5	0.20	0.20
6/30/2008	7.18	7.18	1.40	1.40	103.0	103.0	0.42	0.42
7/31/2008	7.33	7.33	2.10	2.10	79.5	79.5	1.68	1.68
8/31/2008	7.08	7.08	1.12	1.12	94.5	94.5	0.20	0.20
9/30/2008	7.04	7.04	2.40	2.40	91.6	91.6	5.40	5.40
10/31/2008	7.06	7.06	1.50	1.50	65.1	65.1	4.10	4.10
11/30/2008	7.11	7.11	2.50	2.50	59.3	59.3	11.00	11.00
12/31/2008	7.11	7.11	2.30	2.30	68.7	68.7	6.90	6.90
1/31/2009	7.13	7.13	2.24	2.24	0.3	0.3	1.61	1.61
2/28/2009	7.04	7.16	1.26	1.26	55.1	55.1	2.31	2.31
3/31/2009	6.86	7.11	1.89	1.89	61.5	61.5	3.71	3.71
4/30/2009	6.89	7.06	2.03	2.03	75.3	75.3	2.80	2.80
5/31/2009	7.04	7.21	2.59	2.59	61.7	61.7	1.54	1.54
6/30/2009	6.98	7.12	3.64	3.64	56.0	56.0	3.85	3.85

2003 Permit Limits	pH (s.u.)		Nitrogen, ammonia total (as N) (mg/L)		Nitrite plus nitrate total 1 det. (as N) (mg/L)		Nitrogen, Kjeldahl, total (TKN) (water) (mg/L)	
	Minimum	Maximum	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average
	6.5	8.3	Report	Report	Report	Report	Report	Report
Minimum	6.76	6.82	0.05	0.05	0.3	0.3	0.20	0.20
Maximum	7.33	7.35	4.20	4.20	145.0	145.0	11.00	11.00
Average	7.05	7.09	1.22	1.22	66.7	67.0	1.90	1.90
Standard Deviation	0.14	0.11	0.83	0.85	33.4	36.5	2.06	2.14
# Measurements	67	67	67	64	67	54	66	60
# Exceeds Limits	0	0	N/A	N/A	N/A	N/A	N/A	N/A

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MONITORING PERIOD END DATE	Phosphorus, total (as P) (mg/L)		BOD, 5-day, 20 deg. C (mg/L)		BOD, 5-day, 20 deg. C (lb/d)		Ozone - residual (mg/L)	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Minimum	Average
11/30/2003	3.04	3.04	13.0	11.4	7.4	3.7	0.27	0.27
12/31/2003	3.81	3.81	5.0	3.6	3.9	1.5	0.27	0.27
1/31/2004	4.10	4.10	6.4	5.1	3.2	2.2	0.27	0.27
2/29/2004	4.70	4.70	7.2	5.7	4.6	2.6	0.27	0.27
3/31/2004	4.80	4.80	14.4	7.7	5.4	1.8	0.27	0.27
4/30/2004	4.72	4.72	8.1	6.5	2.4	1.6	0.27	0.27
5/31/2004	1.73	1.73	7.4	5.3	2.6	1.2	-	0.27
6/30/2004	1.80	1.80	-	-	0.8	0.7	0.27	0.27
7/31/2004	1.30	1.30	3.5	3.2	1.0	0.5	0.27	0.27
8/31/2004	1.28	1.28	5.0	3.5	0.8	0.5	-	0.27
9/30/2004	0.93	0.93	3.1	3.1	1.2	0.3	0.27	0.27
10/31/2004	0.56	0.56	3.1	3.1	2.1	0.9	-	-
11/30/2004	0.56	0.56	3.1	3.1	1.8	0.6	-	-
12/31/2004	0.94	0.94	3.1	3.1	2.5	0.5	0.27	-
1/31/2005	1.86	1.86	6.3	3.9	4.7	0.8	0.27	-
2/28/2005	2.26	2.26	13.2	10.0	2.8	1.6	-	-
3/31/2005	3.40	3.40	14.6	10.1	5.2	1.1	0.27	-
4/30/2005	3.28	3.28	18.8	13.9	9.1	1.6	0.27	-
5/31/2005	1.32	1.32	6.1	5.2	8.2	5.4	-	-
6/30/2005	1.25	1.25	8.2	5.1	19.0	5.5	-	-
7/31/2005	0.92	0.92	9.2	5.5	10.9	4.1	0.02	0.02
8/31/2005	0.98	0.98	9.3	7.3	11.2	6.7	-	-
9/30/2005	1.48	1.48	14.0	8.9	17.5	8.0	-	0.27
10/31/2005	1.27	1.27	12.6	10.1	16.8	7.5	-	-
11/30/2005	1.70	1.70	12.6	10.6	16.8	8.8	-	-
12/31/2005	1.95	1.95	14.8	11.1	19.7	10.1	-	-
1/31/2006	1.82	1.82	9.9	7.7	12.3	6.4	-	-
2/28/2006	2.01	2.01	12.7	9.8	14.8	9.0	-	-
3/31/2006	2.11	2.11	20.3	14.1	32.1	12.9	0.27	0.27
4/30/2006	1.48	1.48	11.2	8.5	13.6	7.7	0.27	0.27
5/31/2006	1.25	1.25	10.9	8.9	12.6	9.5	0.27	0.27
6/30/2006	1.20	1.20	23.7	13.0	20.0	11.8	-	0.27
7/31/2006	1.85	1.85	37.4	14.4	36.6	14.1	0.27	0.27
8/31/2006	1.01	1.01	8.6	6.4	7.0	5.2	0.27	0.27
9/30/2006	1.02	1.02	9.7	7.0	10.1	7.3	0.27	0.27
10/31/2006	1.10	1.10	4.6	3.6	4.4	3.5	0.05	0.26
11/30/2006	0.63	0.63	9.4	4.3	5.7	3.2	0.27	0.27
12/31/2006	1.70	1.70	9.1	7.8	8.1	5.5	0.27	0.27
1/31/2007	2.51	2.51	12.7	7.6	10.6	6.3	0.04	0.25
2/28/2007	1.92	1.92	-	9.7	11.4	6.8	0.02	0.24

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MONITORING PERIOD END DATE	Phosphorus, total (as P) (mg/L)		BOD, 5-day, 20 deg. C (mg/L)		BOD, 5-day, 20 deg. C (lb/d)		Ozone - residual (mg/L)	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Minimum	Average
3/31/2007	2.35	2.35	15.2	8.2	12.8	6.3	0.26	0.27
4/30/2007	1.17	1.17	14.2	10.1	10.8	7.5	0.11	0.26
5/31/2007	1.66	1.66	13.9	6.2	7.3	3.8	0.14	0.27
6/30/2007	1.63	1.63	12.4	8.5	9.2	5.6	0.04	0.25
7/31/2007	1.52	1.52	7.2	5.1	4.4	3.1	0.06	0.25
8/31/2007	1.53	1.53	18.0	10.1	16.7	9.5	0.04	0.25
9/30/2007	2.60	2.60	56.3	24.2	29.5	19.1	0.04	0.2
10/31/2007	4.00	4.00	31.1	21.0	26.5	12.9	0.03	0.2
11/30/2007	4.50	4.50	39.1	24.3	33.1	20.4	0.02	0.21
12/31/2007	1.31	1.31	23.3	19.3	23.4	13.3	0.02	0.16
1/31/2008	2.92	2.92	29.8	18.9	25.2	16.5	0.02	0.1
2/29/2008	2.56	2.56	17.5	12.1	29.1	19.0	0.02	0.19
3/31/2008	2.04	2.04	23.2	14.7	39.2	25.3	0.02	0.13
4/30/2008	2.02	2.02	32.0	22.6	46.0	32.1	0.02	0.04
5/31/2008	2.92	2.92	30.3	25.1	40.2	31.4	0.02	0.07
6/30/2008	2.76	2.76	28.1	21.1	38.3	27.3	0.02	0.05
7/31/2008	1.35	1.35	29.0	21.0	51.1	35.7	0.02	0.07
8/31/2008	12.00	12.00	34.9	23.3	57.3	40.2	0.02	0.04
9/30/2008	1.30	1.30	27.6	23.1	48.4	38.8	0.02	0.03
10/31/2008	2.12	2.12	22.0	20.0	39.8	35.7	0.02	0.19
11/30/2008	1.15	1.15	23.7	20.9	44.7	37.8	0.02	0.15
12/31/2008	2.52	2.52	37.7	21.2	56.5	34.8	0.02	0.04
1/31/2009	1.34	1.34	38.4	23.7	67.3	40.6	0.02	0.1
2/28/2009	2.88	2.88	19.9	17.2	33.0	28.8	0.02	0.18
3/31/2009	2.91	2.91	18.9	37.7	29.5	29.5	0.02	0.09
4/30/2009	1.26	1.26	14.7	28.4	21.4	21.4	0.02	0.08
5/31/2009	2.55	2.55	23.9	15.0	36.6	22.2	0.02	0.06
6/30/2009	0.76	0.76	20.4	12.2	26.2	17.0	0.02	0.11
2003 Permit Limits	Phosphorus, total (as P) (mg/L)		BOD, 5-day, 20 deg. C (mg/L)		BOD, 5-day, 20 deg. C (lb/d)		Ozone - residual (mg/L)	
	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Minimum	Average
	Report	Report	80	40	200	100	0.02	0.02
Minimum	0.56	0.56	3.1	3.1	0.8	0.3	0.02	0.02
Maximum	12.00	12.00	56.3	37.7	67.3	40.6	0.27	0.27
Average	2.16	2.16	16.7	12.0	18.9	12.1	0.13	0.20
Standard Deviation	1.61	1.61	11.0	7.7	16.4	12.1	0.12	0.09
# Measurements	68	68	66	67	68	68	53	53
# Exceeds Limits	N/A	N/A	0	0	0	0	0	0

Exhibit A
Nitrogen Loads

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD) ¹	AVERAGE FLOW (MGD) ²	TOTAL NITROGEN (mg/l) ³	TOTAL NITROGEN - Existing Flow(lbs/day) ⁴
NEW HAMPSHIRE					
Bethlehem Village District	NH0100501	0.340	0.220	19.600	35.962
Charlestown WWTF	NH0100765	1.100	0.360	19.600	58.847
Claremont WWTF	NH0101257	3.890	1.610	14.060	188.789
Colebrook WWTF	NH0100315	0.450	0.230	19.600	37.597
Groveton WWTF	NH0100226	0.370	0.290	19.600	47.405
Hanover WWTF	NH0100099	2.300	1.440	30.000	360.288
Hinsdale WWTF	NH0100382	0.300	0.300	19.600	49.039
Keene WWTF	NH0100790	6.000	3.910	12.700	414.139
Lancaster POTW	NH0100145	1.200	1.080	8.860	79.804
Lebanon WWTF	NH0100366	3.180	1.980	19.060	314.742
Lisbon WWTF	NH0100421	0.320	0.146	19.600	23.866
Littleton WWTF	NH0100153	1.500	0.880	10.060	73.832
Newport WWTF	NH0100200	1.300	0.700	19.600	114.425
Northumberland Village WPCF	NH0101206	0.060	0.060	19.600	9.808
Sunapee WPCF	NH0100544	0.640	0.380	15.500	49.123
Swanzey WWTP	NH0101150	0.167	0.090	19.600	14.712
Troy WWTF	NH0101052	0.265	0.060	19.600	9.808
Wasau Paper (industrial facility)	NH0001562		5.300	4.400	194.489
Whitefield WWTF	NH0100510	0.185	0.140	19.600	22.885
Winchester WWTP	NH0100404	0.280	0.240	19.600	39.231
Woodsville Fire District	NH0100978	0.330	0.230	16.060	30.806
New Hampshire Total		24.177	19.646		2169.596

VERMONT					
Bellows Falls	VT0100013	1.405	0.610	21.060	107.141
Bethel	VT0100048	0.125	0.120	19.600	19.616
Bradford	VT0100803	0.145	0.140	19.600	22.885
Brattleboro	VT0100064	3.005	1.640	20.060	274.373
Bridgewater	VT0100846	0.045	0.040	19.600	6.539
Canaan	VT0100625	0.185	0.180	19.600	29.424
Cavendish	VT0100862	0.155	0.150	19.600	24.520
Chelsea	VT0100943	0.065	0.060	19.600	9.808
Chester	VT0100081	0.185	0.180	19.600	29.424
Danville	VT0100633	0.065	0.060	19.600	9.808
Lunenburg	VT0101061	0.085	0.080	19.600	13.077
Hartford	VT0100978	0.305	0.300	19.600	49.039
Ludlow	VT0100145	0.705	0.360	15.500	46.537
Lyndon	VT0100595	0.755	0.750	19.600	122.598
Putney	VT0100277	0.085	0.080	19.600	13.077
Randolph	VT0100285	0.405	0.400	19.600	65.386
Readsboro	VT0100731	0.755	0.750	19.600	122.598
Royalton	VT0100854	0.075	0.070	19.600	11.442

St. Johnsbury	VT0100579	1.600	1.140	12.060	114.662
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NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD) ¹	AVERAGE FLOW (MGD) ²	TOTAL NITROGEN (mg/l) ³	TOTAL NITROGEN - Existing Flow(lbs/day) ⁴
Saxtons River	VT0100609	0.105	0.100	19.600	16.346
Sherburne Fire Dist.	VT0101141	0.305	0.300	19.600	49.039
Woodstock WWTP	VT0100749	0.055	0.050	19.600	8.173
Springfield	VT0100374	2.200	1.250	12.060	125.726
Hartford	VT0101010	1.225	0.970	30.060	243.179
Whitingham	VT0101109	0.015	0.010	19.600	1.635
Whitingham Jacksonville	VT0101044	0.055	0.050	19.600	8.173
Cold Brook Fire Dist.	VT0101214	0.055	0.050	19.600	8.173
Wilmington	VT0100706	0.145	0.140	19.600	22.885
Windsor	VT0100919	1.135	0.450	19.600	73.559
Windsor-Weston	VT0100447	0.025	0.020	19.600	3.269
Woodstock WTP	VT0100757	0.455	0.450	19.600	73.559
Woodstock-Taftsville	VT0100765	0.015	0.010	19.600	1.635
Vermont Totals		15.940	10.960		1727.302

MASSACHUSETTS					
Amherst	MA0100218	7.100	4.280	14.100	503.302
Athol	MA0100005	1.750	1.390	17.200	199.393
Barre	MA0103152	0.300	0.290	26.400	63.851
Belchertown	MA0102148	1.000	0.410	12.700	43.426
Charlemont	MA0103101	0.050	0.030	19.600	4.904
Chicopee	MA0101508	15.500	10.000	19.400	1617.960
Easthampton	MA0101478	3.800	3.020	19.600	493.661
Erving #1	MA0101516	1.020	0.320	29.300	78.196
Erving #2	MA0101052	2.700	1.800	3.200	48.038
Erving #3	MA0102776	0.010	0.010	19.600	1.635
Gardner	MA0100994	5.000	3.700	14.600	450.527
Greenfield	MA0101214	3.200	3.770	13.600	427.608
Hadley	MA0100099	0.540	0.320	25.900	69.122
Hardwick G	MA0100102	0.230	0.140	14.600	17.047
Hardwick W	MA0102431	0.040	0.010	12.300	1.026
Hatfield	MA0101290	0.500	0.220	15.600	28.623
Holyoke	MA0101630	17.500	9.700	8.600	695.723
Huntington	MA0101265	0.200	0.120	19.600	19.616
Monroe	MA0100188	0.020	0.010	19.600	1.635
Montague	MA0100137	1.830	1.600	12.900	172.138
N Brookfield	MA0101061	0.760	0.620	23.100	119.445
Northampton	MA0101818	8.600	4.400	22.100	810.982
Northfield	MA0100200	0.280	0.240	16.800	33.627
Northfield School	MA0032573	0.450	0.100	19.600	16.346
Old Deerfield	MA0101940	0.250	0.180	9.200	13.811
Orange	MA0101257	1.100	1.200	8.600	86.069
Palmer	MA0101168	5.600	2.400	18.800	376.301
Royalston	MA0100161	0.040	0.070	19.600	11.442
Russell	MA0100960	0.240	0.160	19.600	26.154
Shelburne Falls	MA0101044	0.250	0.220	16.900	31.008
South Deerfield	MA0101648	0.850	0.700	7.900	46.120
South Hadley	MA0100455	4.200	3.300	28.800	792.634
Spencer	MA0100919	1.080	0.560	13.600	63.517
Springfield	MA0103331	67.000	45.400	4.300	1628.135

Sunderland	MA0101079	0.500	0.190	8.700	13.786
Templeton	MA0100340	2.800	0.400	26.400	88.070

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD) ¹	AVERAGE FLOW (MGD) ²	TOTAL NITROGEN (mg/l) ³	TOTAL NITROGEN - Existing Flow(lbs/day) ⁴
Ware	MA0100889	1.000	0.740	9.400	58.013
Warren	MA0101567	1.500	0.530	14.100	62.325
Westfield	MA0101800	6.100	3.780	20.400	643.114
Winchendon	MA0100862	1.100	0.610	15.500	78.855
Woronoco Village	MA0103233	0.020	0.010	19.600	1.635
Massachusetts Totals		166.010	106.950		9938.820

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 13,836 lbs/day

MA (41 facilities) = 9,939 lbs/day (72%)

VT (32 facilities) = 1,727 lbs/day (12%)

NH (21 facilities) = 2170 lbs/day (16%)

TMDL Baseline Load = 21,672 lbs/day

TMDL Allocation = 16,254 lbs/day (25% reduction)

MA Discharges to Housatonic River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD) ¹	AVERAGE FLOW (MGD) ²	TOTAL NITROGEN (mg/l) ³	TOTAL NITROGEN - Existing Flow(lbs/day) ⁴
MASSACHUSETTS					
Crane	MA0000671		3.100	8.200	212.003
Great Barrington	MA0101524	3.200	2.600	17.000	368.628
Lee	MA0100153	1.000	0.870	14.500	105.209
Lenox	MA0100935	1.190	0.790	11.800	77.745
Mead Laurel Mill	MA0001716		1.500	6.400	80.064
Mead Willow Mill	MA0001848		1.100	4.600	42.200
Pittsfield	MA0101681	17.000	12.000	12.400	1240.992
Stockbridge	MA0101087	0.300	0.240	11.100	22.218
West Stockbridge	MA0103110	0.076	0.018	15.500	2.327
Massachusetts Totals			22.218		2151.386

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 2151.386 lbs/day

TMDL Baseline Load = 3,286 lbs/day

TMDL Allocation = 2,464 lbs/day (25% reduction)

MA Discharges to Thames River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD) ¹	AVERAGE FLOW (MGD) ²	TOTAL NITROGEN (mg/l) ³	TOTAL NITROGEN - Existing Flow(lbs/day) ⁴
MASSACHUSETTS					
Charlton	MA0101141	0.450	0.200	12.700	21.184
Leicester	MA0101796	0.350	0.290	15.500	37.488
Oxford	MA0100170	0.500	0.230	15.500	29.732
Southbridge	MA0100901	3.770	2.900	15.500	374.883
Sturbridge	MA0100421	0.750	0.600	10.400	52.042
Webster	MA0100439	6.000	3.440	17.400	499.199
Massachusetts Totals		11.820	7.660		1014.528

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 1014.528 lbs/day

TMDL Baseline Load = 1,253 lbs/day

TMDL Allocation = 939 lbs/day (25% reduction)