

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)

**Chang Farms, Inc.
415 River Road
South Deerfield, MA 01373**

is authorized to discharge from the facility located at

**Chang Farms, Inc.
301 River Road
Whately, MA 01093**

to receiving water named

**Connecticut River (MA34-04)
Connecticut River Watershed**

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

This permit shall become effective on the first day of the calendar month following 60 days after signature. If no comments are received, this permit shall become effective upon the date of signature.

This permit expires at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on September 29, 2006.

This permit consists of 13 pages in Part I including effluent limitations, monitoring requirements, 8 pages in Attachment A – Freshwater Acute Toxicity Test Procedure and Protocol (2011), and 25 pages in Part II including the Standard Conditions.

Signed this day of

Ken Moraff, Acting Director
Office of Ecosystem Protection
Environmental Protection Agency
Region I
Boston, MA

David Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated process water through **Outfall Serial Number 001** to the Connecticut River. The discharge shall be limited and monitored by the Permittee as specified below:

Effluent Characteristic	Discharge Limitation		Monitoring Requirements ¹	
	Average Monthly	Maximum Daily	Measurement Frequency ²	Sample Type ^{3,4}
Flow ⁵	Report	0.65 MGD	Continuous	Recorder
Flow Rate	---	640 GPM	Continuous	Recorder
Total Suspended Solids (TSS)	15.5 mg/L and 84 lbs/day	23.2 mg/L and 126 lbs/day	1/week	Composite
pH ^{6,7}	6.5 - 8.3 SU		Continuous	Recorder
BOD ₅	26.6 mg/L and 144 lbs/day	41.5 mg/L and 225 lbs/day	1/week	Composite
Temperature	---	Report °F	Continuous	Recorder
<i>E. coli</i> ^{6,8} April 1st through October 31st	126 cfu/100 mL	409 cfu/100 mL	1/week	Grab
Total Residual Chlorine ⁹	1.0 mg/L	1.0 mg/L	1/week	Grab
Total Kjeldahl Nitrogen ¹⁰	Report mg/L	Report mg/L	1/month	Composite
Nitrite + Nitrate Nitrogen ¹⁰	Report mg/L	Report mg/L	1/ month	Composite
Total Phosphorus	Report mg/L	Report mg/L	1/ month	Composite

Effluent Characteristic	Discharge Limitation		Monitoring Requirements	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
WHOLE EFFLUENT TOXICITY ^{11,12,13}				
LC ₅₀	-----	LC ₅₀ ≥50%	2/Year	Composite
Hardness	-----	Report mg/L	2/Year	Composite
Total Residual Chlorine	-----	Report mg/L	2/Year	Grab
Alkalinity	-----	Report mg/L	2/Year	Composite
pH	-----	Report SU	2/Year	Grab
Specific Conductance	-----	Report µmhos/cm	2/Year	Composite
Total Solids	-----	Report mg/L	2/Year	Composite
Total Dissolved Solids	-----	Report mg/L	2/Year	Composite
Ammonia	-----	Report mg/L	2/Year	Composite
Total Organic Carbon	-----	Report mg/L	2/Year	Composite
Total Cadmium	-----	Report mg/L	2/Year	Composite
Total Lead	-----	Report mg/L	2/Year	Composite
Total Copper	-----	Report mg/L	2/Year	Composite
Total Zinc	-----	Report mg/L	2/Year	Composite
Total Nickel	-----	Report mg/L	2/Year	Composite
Total Aluminum	-----	Report mg/L	2/Year	Composite
Total Calcium	-----	Report mg/L	2/Year	Composite
Total Magnesium	-----	Report mg/L	2/Year	Composite
DILUENT WHOLE EFFLUENT TOXICITY ¹⁴				
Hardness	-----	Report mg/L	2/Year	Grab
Alkalinity	-----	Report mg/L	2/Year	Grab
pH	-----	Report SU	2/Year	Grab
Specific Conductance	-----	Report µmhos/cm	2/Year	Grab
Ammonia	-----	Report mg/L	2/Year	Grab
Total Organic Carbon	-----	Report mg/L	2/Year	Grab
Total Cadmium	-----	Report mg/L	2/Year	Grab
Total Lead	-----	Report mg/L	2/Year	Grab

Effluent Characteristic	Discharge Limitation		Monitoring Requirements	
	Average Monthly	Maximum Daily	Measurement Frequency	Sample Type
Total Copper	-----	Report mg/L	2/Year	Grab
Total Zinc	-----	Report mg/L	2/Year	Grab
Total Nickel	-----	Report mg/L	2/Year	Grab
Total Aluminum	-----	Report mg/L	2/Year	Grab

Footnotes:

¹ The effluent samples for Outfall 001 shall be collected at the discharge point from the wastewater treatment system immediately prior to treatment through the ultraviolet disinfection system, except for bacteria, which shall be collected at the discharge point from the wastewater treatment system immediately following treatment through the ultraviolet disinfection system. Any changes in sampling location must be approved in writing by EPA and MassDEP. All samples shall be tested in accordance with the procedures in 40 Code of Federal Regulations (CFR) §136, unless specified elsewhere in the permit.

² Sampling frequency of 1/week is defined as the interval of time between the days of Sunday through Saturday each calendar month; 1/month is defined as the interval of time in each calendar month; 2/year is defined as the interval of time in the calendar month of June, inclusive and the calendar month of September, inclusive. The Permittee shall report the results of sampling for any parameter above its required frequency to EPA and MassDEP, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41 (l)(4)(ii).4.

³ A composite sample shall consist of a twenty-four hour flow proportional composite sample consisting of a minimum of 4 sample aliquots, taken using an automatic sampler on a weekday.

⁴ The timing of grab samples for TRC and bacteria shall correspond with the timing of composite sampling for the other parameters.

⁵ The Permittee shall report the average monthly and maximum daily flow in million gallons per day (MGD) for each sampling period. The flow measurements shall be collected by continuous recorder.

⁶ Requirement for State Certification.

⁷ The pH of the effluent shall be in the range of 6.5 to 8.3 standard units and not more than 0.5 standard units outside of the naturally occurring range. There shall be no change from natural background conditions that would impair any use assigned to the class of the receiving water.

⁸ Bacteria monitoring will be conducted during the period **April 1st through October 31st** only, to reflect the seasonal disinfection requirements.

⁹ The minimum level (ML) for Total Residual Chlorine (TRC) is defined as 20 µg/l using EPA approved methods found in 40 CFR Part 136. The ML is not the minimum level of detection, but rather the lowest point on the curve used to calibrate the test equipment for the pollutant of concern. If EPA approves a more sensitive method of analysis for TRC, the permit may be modified to require the use of the new method with a corresponding lower ML. When reporting sample data at or below the ML, see the latest EPA Region 1 *NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs)* for guidance.

¹⁰ The baseline loading monthly average limit for total nitrogen (TKN plus nitrate + nitrite), 12.4 lbs/day, will take effect 1 year from the effective date of the Final Permit, in conjunction with the requirements of the Nutrient Evaluation and Minimization Program, described in Parts D.1.a.i., and ii. below.

¹¹ All WET test data shall be reported in Discharge Monitoring Reports (DMRs) submitted to EPA and MassDEP. When reporting sample data at or below the ML, see the latest EPA Region 1 *NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs)* for guidance. The ML is not the minimum level of detection, but rather the lowest point on the curve used to calibrate the test equipment for the pollutant of concern.

¹² The LC₅₀ (Lethal Concentration 50 percent) is the concentration of process wastewater causing mortality to 50 percent (%) of the test organisms.

¹³ The Permittee shall conduct acute toxicity tests twice per year following the effective date of the permit. The Permittee shall test the daphnia, *Ceriodaphnia dubia*, and the Fathead minnow, *Pimephales promelas*. Toxicity test samples shall be collected during June and September. The test results shall be submitted by the last day of the month following the completion of the test. The tests must be performed in accordance with test procedures and protocols specified in Attachment A of this permit. If the Toxicity Reduction Evaluation determines an alternative schedule of increased frequency, increased number of species or additional test type, those requirements shall be in effect following the applicable schedule.

¹⁴ The dilution water sample for the WET test shall be collected from the Connecticut River at a point immediately upstream of Outfall 001's zone of influence at a reasonably accessible location. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall either follow procedures outlined in Attachment A – Freshwater Acute Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER in order to obtain an individual approval for use of an alternate dilution water, or the Permittee shall follow the Self-Implementing Alternative Dilution Water Guidance which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA Region I web site at <http://www.epa.gov/Region1/enforcementandassistance/dmr.html>. If this guidance is revoked, the Permittee shall revert to obtaining individual approval as outlined in Attachment A. Any modification or revocation to this guidance will be transmitted to the permittees. However, at any time, the Permittee may choose to contact EPA Region 1 directly using the approach outlined in Attachment A. In the case where an alternate dilution water has been agreed upon, an additional receiving water control (0% effluent) must be tested. Supporting documentation which describes why an alternate dilution water is necessary shall be provided to EPA and MassDEP at the addresses in Section E.1.c. below.

PART I.A. (continued)

2. The discharge shall not cause a violation of the water quality standards of the receiving waters.
3. The effluent shall not impart taste, turbidity, toxicity, radioactivity, or other properties which cause those waters to be unsuitable for the designated uses and characteristics ascribed to their use.
4. The effluent shall not cause objectionable discoloration of the receiving waters.
5. The effluent shall contain neither a visible oil sheen, foam, nor floating or settleable solids at any time.
6. The effluent shall not contain materials in concentrations or in combinations which would impair the uses designated by the classification of the receiving water.
7. The effluent must not lower the quality of any classified body of water below such classification, or lower the existing quality of any body of water if the existing quality is higher than the classification.
8. The Permittee shall report the results of sampling for any parameter above its required frequency to EPA and MassDEP, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR § 122.41(l)(4)(ii).
9. The Permittee shall attach a copy of the laboratory case narrative to the respective Discharge Monitoring Report (DMR) form submitted to EPA and MassDEP for each sampling event reported or concurrent with the submittal of reports using NetDMR as detailed in Part I.E of this Permit. The laboratory case narrative shall include a copy of the laboratory data sheets for each analysis (identifying the test method, the analytical results, and the detection limits for each analyte and provide a brief discussion of whether all appropriate QA/QC procedures were met and were within acceptable limits. Narrative description must explain any violations of permit limitations and corrective actions taken to correct the violation.
10. The Permittee shall properly operate and maintain all treatment systems.
11. The Permittee shall provide written notification to EPA and MassDEP of any changes in the operations at the Facility that may have an effect on the permitted discharge of wastewater from the Facility, including changes that have the potential to cause flow through the treatment systems to exceed the maximum design flow rates or treatment capacity.
12. The Permittee is authorized to discharge only those chemicals and additives listed in Attachment 4 to the Draft Permit Fact Sheet.
13. If addition of chemicals such as coagulants is required to achieve permit limitations, such chemicals may be used, provided that they are identified in the permit application. If the addition of chemicals which were not disclosed in the permit application is required, such chemicals must be approved through subsequent communications with MassDEP and EPA. See Part I.A.19. for requirements of the Best Management Practices Plan.
14. The Permittee shall not add chemicals (i.e. disinfectant agents, detergents, emulsifiers, etc.), bioremedial agents, including microbes, to any discharges from the outfall listed without prior approval from EPA and MassDEP. The Permittee shall notify EPA and MassDEP at the addresses in Part I.E. when it proposes to add or replace any chemicals, bio-remedial agents, including microbes, to the effluent or the treatment systems designed to treat effluent.
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. 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
 - iii. Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and Massachusetts regulations.
- 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. Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and Massachusetts regulations.
- 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. Numerical Effluent Limitations for Toxicants

- a. U.S. Environmental Protection Agency (EPA) or the Massachusetts Department of Environmental Protection (MassDEP) may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the CWA, state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

17. The Permittee shall not use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application. Pollutants which are not limited by this permit, but which have been specifically disclosed in the permit application, may be discharged up to the frequency and level disclosed in the application, provided that such discharge does not violate Section 307 or 311 of the CWA or applicable state water quality standards.

18. 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.

19. Best Management Practices (BMP) Plan

- a. The Permittee shall continue to implement, maintain, and update as necessary, a BMP Plan designed to reduce, or prevent the discharge of pollutants to the receiving waters identified in this permit. The BMP Plan shall be a written document that is consistent

with the terms of this permit. Additionally, the BMP Plan shall serve as a tool to document the Permittee's compliance with the terms of this permit.

- b. Monitoring Program - A program which clearly tracks permit limits, requirements, and conditions such that the permit parameters, sample locations, sample frequency, and sample type are properly collected and reported.
- c. Preventative Maintenance - A preventative maintenance program must involve inspections and maintenance of process water system operation and treatment systems (i.e. well field(s), storage tanks, heat exchanger(s), inline screen(s) and UV disinfection system) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdown or failures resulting in discharges of pollutants to surface waters. All wash water that leads to process water drainage must be reclaimed and properly treated. No sanitary waste waters.
- d. Pollutant Minimization – The Permittee shall develop, implement, and maintain a minimization program designed to evaluate and minimize the discharge of pollutants to surface waters from the facility. At a minimum this shall include the specific procedures used to minimize the discharge of pollutants to surface waters above water quality criteria and permit limitations, and any standards that can be incorporated into the design of the Facility to minimize the discharge of conventional and toxic pollutants.
- e. Good Housekeeping - Good housekeeping requires the maintenance of a clean orderly facility.
- f. Spill Prevention and Response Procedure - Areas where potential spills can occur and their accompanying drainage points, must be identified clearly in the BMP Plan. The potential for spills to enter the process water drainage system must be eliminated whenever feasible. Where appropriate, specific material handling procedures, storage requirements, and procedures for cleaning up spills must be identified in the BMP Plan and made available to the appropriate personnel. The nearby drains should be tested for pollutants contained in the material spilled within 24 hours from the spill and as directed by the EPA or the MassDEP during the clean up.
- g. Employee Training - Employee training programs must inform personnel responsible for implementing activities identified in the BMP Plan, or otherwise responsible for process water management at all levels, of the components and goals of the BMP Plan. Training should address topics such as spill response, good housekeeping and material management practices. The BMP Plan must identify periodic dates for such training (at a minimum annually).
- h. Visual Inspections - Qualified facility personnel must be identified to inspect designated equipment and facility areas. Material handling areas must be inspected for evidence of, or the potential for, pollutants entering the drainage system. Along with the monitoring program in the vicinity of the wastewater treatment building, the outfall at the receiving water shall be visually inspected to the extent practicable. A tracking or follow up procedure must be used to ensure that appropriate actions have been made in response to problems observed during the inspection. Records of inspections must be maintained for five (5) years.
- i. Recordkeeping and Internal Reporting Procedures - Incidents such as spills, permit violations or other discharges, along with other information describing the quality and quantity of process water discharges must be included in the records. All inspections

and maintenance activities must be documented and maintained on site for at least five (5) years.

- j. Material Management – At a minimum, a record of the following information for all water additives and chemicals used at the facility, (water additives and chemicals include chemicals used for disinfection, control of biological growth, foliar spray and/or irrigation, control of corrosion and scale in water pipes, etc.):
 - i. Product name, chemical formula, and manufacturer of the additive;
 - ii. Purpose or use of the additive;
 - iii. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each additive;
 - iv. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the additive;
 - v. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC₅₀ in percent for aquatic organism(s)).
- k. Data Validation – The Permittee must ensure samples collected in support of meeting permit requirements are representative of the effluent as specified above, and that samples were properly collected, preserved, and analyzed. Any data issue submitted in DMRs must include a narrative explanation of any issues identified.
- l. Annual Assessment - An annual site inspection must be conducted by assigned personnel as named in the BMP Plan, to verify that the description of potential pollutant sources is accurate, that the process flow diagram has been updated or otherwise modified to reflect current conditions, and controls to reduce pollutants in process water discharges identified in the BMP Plan are being implemented and are adequate. A tracking or follow-up procedure must be used to ensure that the appropriate action has been taken in response to the inspection. Records documenting significant observations made during the site inspection must be retained as part of the BMP Plan for a minimum of five (5) years.
- m. Corrective Action – When a violation of a permit limitation or requirement occurs, the Permittee must follow protocols in Part II. Standard Conditions at a minimum. The cause for any violation must be identified and corrected within applicable timeframes.
- n. Consistency Review – The Permittee must conduct a consistency review of its BMP Plan in relation to other plans which incorporate best practices. Process controls may reflect requirements of Best Management Practices (BMP) Programs, including Operation and Maintenance plans, and may incorporate any part of such plans into the BMP Plan by reference.
- o. Amending the BMP Plan – The Permittee shall immediately amend the BMP Plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the Connecticut River; a release of reportable quantities of toxic or conventional pollutants; or if the BMP Plan proves to be ineffective in achieving the general objectives of controlling pollutants in process water discharges.

B. UNAUTHORIZED DISCHARGES

1. The Permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A.1 of this permit. Discharges of

wastewater from any other point sources not authorized by this permit or other NPDES permits shall be reported in accordance with Part II (Standard Conditions), Section D.1.e.(1) of this permit (Twenty-four hour reporting) unless associated with non-point source agricultural and silvicultural activities excluded under 40 CFR §122.3(e).

2. Discharge of sanitary wastewater is prohibited.
3. Discharge of screenable solids, that is, those solids which are removed using a 40 mesh screen or smaller, is prohibited.
4. At no time shall solids removed from wastewater treatment operations and equipment cleaning be discharged to the Connecticut River. The Permittee shall comply with all existing federal, state, and local laws and regulations that apply to the reuse or disposal of these solids.

C. REOPENER CLAUSE

This permit may be modified, or revoked and reissued in accordance with 40 CFR §122.62. The reasons for modification or revocation may include, but are not limited to:

1. Material and substantial alterations or additions to the Facility or activity have occurred;
2. New information is received which was not available at the time of permit issuance and that would have justified the application of different permit conditions at the time of issuance; or
3. An applicable effluent standard or limitation is issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, which:
 - 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 CWA.

D. SPECIAL CONDITIONS AND REQUIREMENTS

1. Nitrogen Evaluation and Minimization Program
 - a. The Permittee shall undertake the following steps during the duration of the permit to optimize reduction in nitrogen loading from the facility to the Connecticut River:
 - i. **Upon the effective date of the permit**, the Permittee shall implement nitrogen monitoring requirements.
 - ii. **Within 12 months of the effective date of the permit**, the Permittee shall complete a loading analysis sufficient to characterize loadings in the Facility as well as loadings to the receiving water; the evaluation shall be such that variations in loadings can be determined with a high degree of confidence; the Permittee shall develop a program to minimize nitrogen loadings that must include an optimization plan to provide removal of nitrogen with the current treatment system or with alterations to treatment techniques. The Permittee shall implement the recommended operational changes in order to maintain a mass discharge loading of total nitrogen of **12.4 lbs/day**, during the remainder of the permit term.
 - iii. **Within 24 months of the effective date of the permit**, the Permittee shall submit a report to EPA and MassDEP documenting this evaluation and presenting a description of any operational changes.

- iv. The Permittee shall submit an annual report to EPA and MassDEP, **by June 1 each year** that summarizes activities related to optimizing nitrogen removal efficiencies, which documents the annual nitrogen discharge load from the Facility, and tracks trends relative to the previous year.
2. Toxicity Reduction Evaluation
 - a. The Permittee shall conduct a toxicity reduction evaluation (TRE). The TRE shall require a Toxicity Identification Evaluation (TIE) along with an analysis of the cause of acute toxicity, a study of the chlorine level in the process waters and its impact on toxicity, as well as all major TRE components as outlined in EPA's *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (August 1999).
 - b. The TRE goal is to reduce or eliminate toxicity to an acceptable level as determined by EPA. EPA may use the monitoring results of the toxicity tests and the results of the TRE to develop numerical effluent limitations for any pollutants in the future, as necessary.
 - c. The Permittee shall submit a TRE scope of work **within 60 days of the effective date of the permit.**
 - d. The Permittee shall begin implementation of the TRE **within 90 days of the effective date of the permit.**
 - e. The Permittee shall complete the TRE **within 12 months of the effective date of the permit.**

E. MONITORING AND REPORTING

1. **Upon the effective date of the permit**, the Permittee must submit monitoring data and other reports to EPA electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:
 - a. Submittal of Reports Using NetDMR

NetDMR is accessed from: <http://www.epa.gov/netdmr>. The Permittee shall submit DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt-out request").

DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.
 - b. Submittal of NetDMR Opt-Out Requests

Opt-out requests must be submitted in writing to EPA for written approval at least 60 days from the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for 12 months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the Permittee submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to the following addresses:

Attn: NetDMR Coordinator

U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-1)
Boston, MA 02109-3912

and

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Forms (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. All reports required under this permit shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Duplicate signed copies of **DMRs, monthly operation and maintenance reports, and other reports or notifications** required above shall be submitted to the State at the following address:

MassDEP – Western Region
Bureau of Waste Prevention
436 Dwight Street, Suite 402
Springfield, MA 01103

And, **without DMRs**, to the State at the following address:

Massachusetts Department of Environmental Protection
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

Any verbal reports, if required in Parts I and/or II of this permit, shall be made to both EPA-New England and to MassDEP.

F. STATE PERMIT CONDITIONS

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection (MassDEP) pursuant to the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and 314 C.M.R. 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.
2. This authorization also incorporates the state water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 C.F.R. 124.53, M.G.L. c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 CMR 3.11.
3. Each agency shall have the independent right to enforce the terms and conditions of this permit. 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 this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as a NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6°C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at <http://www.epa.gov/region1/enforcement/water/dmr.html> for further important details on alternate dilution water substitution requests.

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS¹

1.	Test type	Static, non-renewal
2.	Temperature (°C)	20 ± 1°C or 25 ± 1°C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and <u>Selenastrum</u> to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water ²	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	≥ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

series.

- | | |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16. Effect measured | Mortality-no movement of body or appendages on gentle prodding |
| 17. Test acceptability | 90% or greater survival of test organisms in dilution water control solution |
| 18. Sampling requirements | For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection. |
| 19. Sample volume required | Minimum 1 liter |

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

**EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW
(PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST¹**

1. Test Type	Static, non-renewal
2. Temperature (°C)	$20 \pm 1^{\circ} \text{C}$ or $25 \pm 1^{\circ} \text{C}$
3. Light quality	Ambient laboratory illumination
4. Photoperiod	16 hr light, 8 hr dark
5. Size of test vessels	250 mL minimum
6. Volume of test solution	Minimum 200 mL/replicate
7. Age of fish	1-14 days old and age within 24 hrs of each other
8. No. of fish per chamber	10
9. No. of replicate test vessels per treatment	4
10. Total no. organisms per concentration	40
11. Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12. Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13. dilution water ²	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14. Dilution series	≥ 0.5 , must bracket the permitted RWC

15. Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Effect measured	Mortality-no movement on gentle prodding
17. Test acceptability	90% or greater survival of test organisms in dilution water control solution
18. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19. Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

<u>Parameter</u>	Effluent	Receiving Water	ML (mg/l)
Hardness ¹	x	x	0.5
Total Residual Chlorine (TRC) ^{2, 3}	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

- Hardness may be determined by:
 - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 2340B (hardness by calculation)
 - Method 2340C (titration)
- Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
 - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
 - Method 4500-CL E Low Level Amperometric Titration
 - Method 4500-CL G DPD Colorimetric Method
- Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

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PART II. A. GENERAL REQUIREMENTS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

- a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

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4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including “sludge-only facilities”), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

- a. In accordance with 40 CFR Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR Part 2 (Public Information).
- b. Claims of confidentiality for the following information will be denied:
 - (1) The name and address of any permit applicant or permittee;
 - (2) Permit applications, permits, and effluent data as defined in 40 CFR §2.302(a)(2).
- c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

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8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

- (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

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- (2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can be reasonably expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
- (3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. Upset

- a. Definition. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

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administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
 - (4) The permittee complied with any remedial measures required under B.3. above.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

PART II. C. MONITORING REQUIREMENTS

1. Monitoring and Records

- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Except for records for monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator at any time.
- c. Records of monitoring information shall include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.
- d. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.
- e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by

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imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The permittee shall allow the Regional Administrator or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

- a. **Planned Changes.** The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:
 - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR§122.29(b); or
 - (2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§122.42(a)(1).
 - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition or change may justify the application of permit conditions different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. **Anticipated noncompliance.** The permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- c. **Transfers.** This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and

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incorporate such other requirements as may be necessary under the CWA. (See 40 CFR Part 122.61; in some cases, modification or revocation and reissuance is mandatory.)

- d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
 - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
 - (2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
 - (3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.
- e. Twenty-four hour reporting.
 - (1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
 - (2) The following shall be included as information which must be reported within 24 hours under this paragraph.
 - (a) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR §122.41(g).)
 - (b) Any upset which exceeds any effluent limitation in the permit.
 - (c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)
 - (3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

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- f. Compliance Schedules. Reports of compliance or noncompliance with, any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
 - g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under Paragraphs D.1.d., D.1.e., and D.1.f. of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D.1.e. of this section.
 - h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.
2. Signatory Requirement
- a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §122.22)
 - b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.
3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and Federal standards and limitations to which a “discharge”, a “sewage sludge use or disposal practice”, or a related activity is subject to, including “effluent limitations”, water quality standards, standards of performance, toxic effluent standards or prohibitions, “best management practices”, pretreatment standards, and “standards for sewage sludge use and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

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Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in “approved States”, including any approved modifications or revisions.

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

Average monthly discharge limitation means the highest allowable average of “daily discharges” over a calendar month calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

Average weekly discharge limitation means the highest allowable average of “daily discharges” measured during the calendar week divided by the number of “daily discharges” measured during the week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

- (a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.
- (b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.
- (c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

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- (d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.
- (e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a “discharge” which occurs without interruption throughout the operating hours of the facility except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

Daily Discharge means the discharge of a pollutant measured during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees. DMRs must be used by “approved States” as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA’s.

Discharge of a pollutant means:

- (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source”, or
- (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation (See “Point Source” definition).

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead

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to a treatment works; and discharges through pipes, sewers, or other conveyances leading into privately owned treatment works.

This term does not include an addition of pollutants by any “indirect discharger.”

Effluent limitation means any restriction imposed by the Regional Administrator on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States”, the waters of the “contiguous zone”, or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under Section 304(b) of CWA to adopt or revise “effluent limitations”.

EPA means the United States “Environmental Protection Agency”.

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- (a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (b) Therefore is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act (CWA), the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

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populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable “daily discharge” concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as “maximum concentration” or “Instantaneous Maximum Concentration” during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean “a value that shall not be exceeded” during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of “Maximum Daily Discharge” and “Average Daily Discharge” concentrations are specifically limited to the daily (24-hour duration) values.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribe organization, or a designated and approved management agency under Section 208 of the CWA.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program”.

New Discharger means any building, structure, facility, or installation:

- (a) From which there is or may be a “discharge of pollutants”;
- (b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;
- (c) Which is not a “new source”; and
- (d) Which has never received a finally effective NPDES permit for discharges at that “site”.

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore rig or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a “site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Regional Administrator in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

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An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a “new discharger” only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a “discharge of pollutants”, the construction of which commenced:

- (a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or
- (b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means “National Pollutant Discharge Elimination System”.

Owner or operator means the owner or operator of any “facility or activity” subject to regulation under the NPDES programs.

Pass through means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW’s NPDES permit (including an increase in the magnitude or duration of a violation).

Permit means an authorization, license, or equivalent control document issued by EPA or an “approved” State.

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

- (a) Sewage from vessels; or
- (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

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Primary industry category means any industry category listed in the NRDC settlement agreement (Natural Resources Defense Council et al. v. Train, 8 E.R.C. 2120 (D.D.C. 1976), modified 12 E.R.C. 1833 (D. D.C. 1979)); also listed in Appendix A of 40 CFR Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (b) not a “POTW”.

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a “State” or “municipality”.

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary Industry Category means any industry which is not a “primary industry category”.

Section 313 water priority chemical means a chemical or chemical category which:

- (1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);
- (2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and
- (3) satisfies at least one of the following criteria:
 - (i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
 - (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
 - (iii) are pollutants for which EPA has published acute or chronic water quality criteria.

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

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Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials, fuels, materials such as solvents, detergents, and plastic pellets, raw materials used in food processing or production, hazardous substance designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to EPCRA Section 313, fertilizers, pesticides, and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 302.4).

Sludge-only facility means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to Section 405(d) of the CWA, and is required to obtain a permit under 40 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants means any pollutant listed as toxic under Section 307 (a)(1) or, in the case of “sludge use or disposal practices” any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or wastewater treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and wastewater from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR Part 503 as a “treatment works treating domestic sewage”, where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 CFR Part 503.

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Waste Pile means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide;
- (b) All interstate waters, including interstate “wetlands”;
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in Paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in Paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

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Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

- (1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and
- (2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 122.2,

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classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the State Director, because of the potential for sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

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Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Industrial wastewater is wastewater generated in a commercial or industrial process.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

Municipality means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management agency under section 208 of the CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

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Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is an individual, association, partnership, corporation, municipality, State or Federal Agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

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Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to: domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

NPDES PART II STANDARD CONDITIONS (January, 2007)

Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl ₂	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont. (Continuous)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M ³ /day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH ₃ -N	Ammonia nitrogen as nitrogen
NO ₃ -N	Nitrate as nitrogen
NO ₂ -N	Nitrite as nitrogen
NO ₃ -NO ₂	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
Surfactant	Surface-active agent

NPDES PART II STANDARD CONDITIONS
(January, 2007)

Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
ug/l	Microgram(s) per liter
WET	“Whole effluent toxicity” is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	“Chronic (Long-term Exposure Test) – No Observed Effect Concentration”. The highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.
A-NOEC	“Acute (Short-term Exposure Test) – No Observed Effect Concentration” (see C-NOEC definition).
LC ₅₀	LC ₅₀ is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC ₅₀ = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO
THE CLEAN WATER ACT (CWA)**

NPDES PERMIT NUMBER: MA0040207

PUBLIC NOTICE START AND END DATES: September 24, 2013 – October 23, 2013

NAME AND MAILING ADDRESS OF APPLICANT:

Chang Farms, Inc.
415 River Road
South Deerfield, MA 01373

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Chang Farms, Inc.
301 River Road
Whately, MA 01093

RECEIVING WATER(S): Connecticut River (Segment MA34-04)
Connecticut River Watershed

RECEIVING WATER CLASSIFICATION(S): B

SIC CODE(S): 100 (Agricultural Products - Crops)
0182 (Bean Sprouts Grown Under Cover)

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Attachments:

- Attachment 1: Chang Farms Location Map
- Attachment 2: Chang Farms Site Plan
- Attachment 3: Discharge Monitoring Data
- Attachment 4: Summary of Chang Farms Chemical Usage
- Attachment 5: Chang Farms Process Flow Diagram
- Attachment 6: Calculation of Estimated 7Q10 and Dilution Factor

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

1.1 Proposed Action

The above applicant has applied to the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) for re-issuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge treated effluent into the designated receiving water. Chang Farms, Inc. (“Chang Farms”) was issued a NPDES permit to discharge process wastewater to Sugarloaf Brook (MA0028851) on September 30, 1985. Chang Farms notified EPA on February 10, 1995 that it had ended discharge to Sugarloaf Brook. EPA responded in a letter dated March 10, 1995, that because Chang Farms was no longer discharging to waters of the U.S. NPDES permit MA0028851 would be terminated. At some time between 1995 and 2004 discharge was directed by gravity over ground by drainage swale to Sugarloaf Brook. The DEP and Chang Farms agreed in an administrative consent order (ACO-WE-04-1G001) dated June 1, 2004 (“ACO”), that Chang Farms, would obtain a Massachusetts water withdrawal permit and an NPDES discharge permit.

The current permit (“2006 permit”) was issued on September 29, 2006, and expired November 30, 2011. The ACO included the requirement that an outfall to the Connecticut River (Outfall 001) be complete and operational within 120 days of the issuance of the final NPDES permit. Upon completion, discharges to Sugarloaf Brook would be discontinued (Outfall 002). Outfall 001 was completed in August 2007 and discharges from Outfall 002 were discontinued.

EPA received a permit renewal application from the facility dated February 14, 2011 and a revised permit renewal application dated December 9, 2011. Since the permit renewal application was deemed timely and complete by EPA, the permit has been administratively continued pursuant to 40 CFR §122.6.

On September 10, 2012, EPA sent a letter pursuant to Section 308 of the Clean Water Act (“308 letter”) requesting more information related to discharges from the Facility to the Connecticut River (Segment MA34-04). Chang Farms submitted the information requested in the 308 letter and additional information in three responses dated October 10, 2012, October 30, 2012, and December 5, 2012. The Draft Permit is based on the information provided in the original and revised permit renewal applications and the additional information provided to EPA through the above mentioned correspondences.

1.2 Type of Facility

Chang Farms is a family owned and operated enterprise engaged in the production and distribution of sprouts from seed for the retail market. Raw materials used at the Facility include seeds, nutrient growing solution, disinfection chemicals and packaging materials. The Facility uses groundwater extracted from three well fields at the Facility. The sprouts are grown in enclosed rooms under a controlled environment, harvested, washed, packaged and shipped from the Facility daily.

1.3 Discharge Location

The Facility is located on a 73-acre agricultural site along River Road adjacent to the Connecticut River near the confluence between Sugarloaf Brook and the Connecticut River in South Deerfield,

Massachusetts (see Attachment 1). The portion of the Facility located on the west side of River Road consists of 45 acres and includes a sprout production building (the “production building”), a wastewater treatment building (the “treatment building”) open land used for agricultural activities not associated with the Facility, a groundwater well field adjacent to the production building consisting of 12 wells (the “original well field”), a groundwater well field west of the production building consisting of five wells (the “west well field”) and paved parking and access areas. The portion of the Facility located on the east side of River Road consists of 28 acres and includes open land used for agricultural activities not associated with the Facility, a groundwater well field consisting of 11 wells (the “east well field”), and dirt access areas. The Connecticut River flows along the eastern boundary of the Facility property. The outfall extends approximately 50 feet from the western bank of the Connecticut River (at bankfull stage) and discharges below the water surface. The approximate latitude and longitude for the outfall is presented in Table 1. The site plan for the Facility is included in Attachment 2.

Table 1: Outfall Location

Outfall Number	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)
001	42° 27' 44.60" N	72° 35' 18.70" W

2. Description of Discharge

The 2006 permit authorized the discharge of treated effluent from Outfalls 001 and 002 to the Connecticut River and Sugarloaf Brook, respectively. As mentioned above, discharges to Sugarloaf Brook through Outfall 002 were discontinued in 2007. Outfall 001 consists of treated process wastewater. Discharge monitoring data from February 1, 2008 through February 28, 2013 for Outfall 001 is included in Attachment 3.

Chang Farms uses well water from the three on-site well fields for washing and soaking beans, irrigating and washing sprout plants, washing equipment and disinfecting the Facility. The Permittee was authorized December 22, 2005 under MassDEP Water Management Act (WMA) permit #9P2-01-06-337.01 to withdraw a daily average of 0.15 million gallons per day (MGD) from the original well field. In February 2011, the Permittee submitted a new well withdrawal permit application to MassDEP for additional withdrawal up to 500,000 GPD combined from two new sources: the west well field and east well field. The Permittee received an amendment to their WMA permit from MassDEP dated May 21, 2012 which allowed groundwater withdrawal up to 0.65 million gallons per day (MGD). This permit expires November 30, 2015. Water is utilized in production as follows:

Irrigation Uses

- Wash and soak the beans at a controlled temperature: 7AM to 11 AM
- Irrigate the cells for sprout growth: Continuous
- Wash and disinfect the growth equipment and cells: 11 PM to 3 AM

Production

- Wash the product for market: 11 PM to 3 AM
- Wash and disinfect the process and packing equipment: 3 PM to 6 AM

Wastewater from the Facility includes wash, soak and irrigation water used in sprout production and wash and disinfection water used between each sprout production batch. The wastewater contains suspended solids, biochemical oxygen demand (BOD₅), bacteria, nitrogen, and phosphorus. Additional wastewater constituents include applied calcium-based nutrients, liquid acid equipment cleaners and sanitizers, liquid chlorinated alkaline foam cleaners and liquid phosphoric acid foam cleaners. Chemicals used at the Facility that may be discharged during normal operation and maintenance are included in Attachment 4. Cleaning agents or biocides listed for hand washing or sink cleaning are discharged to the septic system and are not discharged with the wastewater.

Process wastewater from the production areas flows to a process water tank, and then through a 0.020 inch screen filter to a combined wastewater tank. Samples are taken prior to ultraviolet (UV) disinfection. Spent irrigation water flows to a spent irrigation water tank, through a self-cleaning inline filter and a heat exchanger to the combined wastewater tank. Wastewater from the combined wastewater tank is then pumped through the UV disinfection units prior to discharge via Outfall 001. The location for samples required after UV disinfection is in line after the UV units, before the effluent discharges to the outfall pipe. The UV disinfection system is used to decrease the *E. Coli* bacteria present in the effluent. The maximum design flow capacity of each ultraviolet unit is 320 gallons per minute (GPM), for a total design flow capacity of 640 GPM if both units are operated simultaneously. The Facility also has two water closets for sanitation wastes. These drain to a septic tank and leaching system down gradient of the original well field.

The outfall pipe to the Connecticut River is a submerged 4" high density polyethylene casing with a stainless steel bar grate approximately 2' by 3'. The functional area of the grate, which acts as a diffuser, measures approximately 1' by 2'. The outfall pipe is located approximately 50' from the west bank of the Connecticut River as a function of channel width measured at bankfull stage. Since the 2006 Permit was issued, the Facility has seen increased product demand and has expanded the existing production building. The discharge pipe and wastewater treatment system were originally designed with expansion in mind. As a result, the applicant has requested to discharge up to a peak flow of 650,000 GPD of treated process wastewater to the Connecticut River.

3. Receiving Water Description

The Facility discharges to the Connecticut River (Designated by the MassDEP as Segment 34-04). This segment is 34.372 miles in length from the confluence with the Deerfield River in Greenfield/Montague/Deerfield to the Holyoke Dam in Holyoke/South Hadley. The Connecticut River eventually flows into Long Island Sound. The Facility is approximately 2,000 feet upstream of the confluence between the Connecticut River and Sugarloaf Brook and just below the South Deerfield Wastewater Treatment Facility. MassDEP classifies this segment of the Connecticut River as Class B (warm water fishery and combined sewer overflow)¹.

Class B waters are described in the Commonwealth of Massachusetts Water Quality Standards (314 CMR 4.05(3)(b)) as "*designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary*

¹ <http://www.mass.gov/dep/water/laws/tblfig.pdf>

contact recreation. Where designated in 314 CMR 4.06, they shall be suitable as a source of public water supply with appropriate treatment (Treated Water Supply). Class B 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.” A warm water fishery is defined in 314 CMR 4.02 as “waters in which the maximum mean monthly temperature generally exceeds 68°F (20°C) during the summer months and are not capable of sustaining a year-round population of cold-water stenothermal aquatic life.” The Connecticut River is identified in 314 CMR 4.06, Table 6, with a CSO qualifier, indicating that these waters “are identified as impacted by the discharge of combined sewer overflows; however, a long term control plan has not been approved or fully implemented for the CSO discharges.”(See 4.06(1)(d)(10)).

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 MA34-04 is listed as a Category 5 “Waters Requiring a TMDL” on the Massachusetts Year 2012 Integrated List of Waters (CWA Sections 303d and 305b)². The pollutants requiring a TMDL are *Escherichia coli* (*E. coli*), and polychlorinated biphenyls (PCBs) in fish tissue. This segment is included in the out-of-basin area in the *Long Island Sound Nitrogen TMDL* (approved April 2001). The status of each designated use described in the Connecticut River Watershed 2003 Water Quality Assessment Report³ is presented in Table 2.

Table 2: Summary of Designated Uses for Connecticut River Segment MA34-04

Designated Use	Status
Aquatic Life	Support, Alert Status
Aesthetics	Support
Primary Contact Recreation	Support
Secondary Contact Recreation	Support
Fish Consumption	Impaired

The Aquatic Life use is supported in this segment based on good water quality data, the excellent survival of test organisms exposed to water collected from the Connecticut River in this segment, and the general lack of acute toxicity in the effluents of facilities discharging to this segment. This use is identified with an Alert Status in the Connecticut River Watershed 2003 Water Quality Assessment due to the isolated occurrences of *Trapa natans* (a non-native aquatic macrophyte) found in Cove Island Cove and at the mouth of the Mill River in Northampton and “the risk that fish tissue contaminants pose to fish-eating wildlife.” The contaminants noted are mercury, dichlorodiphenyltrichloroethane (DDT) homologs, PCBs and dioxin. The Primary Contact

² Massachusetts Year 2012 Integrated List of Waters, Proposed Listing of the Condition of Massachusetts’ Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. MassDEP Division of Watershed Management Watershed Planning Program, Worcester, Massachusetts; January 2012, Control Number CN400.0.

³ Connecticut River Watershed 2003 Water Quality Assessment. MassDEP Division of Watershed Management, Worcester, Massachusetts; October 2008, Report Number: 34-AC-2.

Recreation, Secondary Contact Recreation and Aesthetics uses are supported in this segment based on acceptable bacteria counts and the general lack of objectionable conditions. The Fish Consumption use is impaired in this segment based on MA Department of Public Health site specific fish consumption advisory for the mainstem of the Connecticut River due to PCBs.⁴

4. Limitations and Conditions

The effluent limitations, monitoring requirements, and any implementation schedule (if required) may be found in the Draft Permit (see Part I, Effluent Limitations and Monitoring Requirements and Part II, Standard Conditions). The basis for the limits and other permit requirements are described below.

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. In this permit EPA considered (a) technology-based requirements, (b) water quality-based requirements, and (c) all limitations and requirements in the current/existing permit, when developing the permit limits.

5.2 Technology Based Requirements

Subpart A of the 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)]. Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit.

⁴ Freshwater Fish Consumption Advisory List. Massachusetts Department of Public Health Bureau of Environmental Health; October 11, 2011.

EPA has not promulgated technology-based National Effluent Limitations Guidelines (ELGs) for agricultural facilities engaged in crop production (Standard Industrial Code 100). In the absence of technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1)(B) of the CWA to establish technology-based effluent limitations on a case-by-case basis using Best Professional Judgment (BPJ).

5.3 Water Quality-Based Requirements

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 interfere with the attainment or maintenance of water quality in 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) anti-degradation 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 must limit 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 permit’s re-issuance application, monthly discharge monitoring reports (DMRs), 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 Anti-backsliding

Anti-backsliding as defined in 40 CFR §122.44(l)(1) requires reissued permits to contain limitations as stringent or more stringent than those of the previous permit unless the circumstances allow application of one of the defined exceptions to this regulation. As explained above, anti-backsliding applies to limits contained in the existing permit and, therefore, these limits are continued in the Draft Permit. Under §402(o)(2), a permit may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant under a limited number of exceptions. Specifically, under §402(o)(2)(A), a less stringent effluent limitation may be justified if “material and substantial

alterations or additions to the permitted facility occurred after permit issuance.” Therefore, limits included in the Draft Permit meet anti-backsliding requirements.

5.5 Anti-degradation

The Commonwealth of Massachusetts’ anti-degradation 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

Chang Farms produces and distributes a variety of bean sprouts for retail sale. The production of sprouts begins in the production building by sorting and washing beans received in bagged lots. Beans are then soaked in tepid water to prepare for germination. Next, beans are placed in double layers inside a 6’ by 6’ growing cell. Cells are placed inside controlled growing rooms in the production building where they are periodically irrigated with tempered water, which ensures adequate moisture needed for growth. The sprouts are periodically dosed with a light spray of calcium-based nutrients to enhance growth during irrigation. The beans germinate in the cells and produce a dense mass of sprouts in 3 to 5 days. When growth is complete, the cells are removed from the growing rooms and sprouts are removed from the cells. Once removed from the cells, sprouts are washed, separated and packaged for market in the Facility such that the sprouts are delivered to market within 4 to 5 hours of harvest. Production of sprouts occurs daily. When growing is complete, the Facility is washed and disinfected.

Water supplied by the original well field, east well field and west well field is used for sprout production. The groundwater is stored in well water storage tanks at the Facility until use. Wastewater generated in the bean sprout production and wastewater generated during wash and disinfection of the Facility is discharged through Outfall 001 via a 6” subsurface pipe which extends from the wastewater treatment building, beneath River Road, Sugarloaf Brook and agricultural fields to the Connecticut River. The treatment process for these process wastewaters consists of filtration and disinfection through an ultraviolet system as described above. Spent process water is not recycled.

6.2 Permitted Outfalls and Dilution Factor

6.2.1 Permitted Outfall

The Draft Permit allows discharges to the Connecticut River via Outfall 001. The discharge from Outfall 001 consists of the process water used to wash, soak and irrigate beans and sprouts at the Facility and the process water used to wash and disinfect the Facility between batches. As described above, the Connecticut River is a Class B freshwater waterbody and a Category 5 “Waters requiring a TMDL” for *E. coli* and PCBs in fish tissue. Water used during sprout production is supplied by three well fields located on the property. Water is not taken from the Connecticut River for this use.

Domestic sewerage from the Facility discharges to an on-site septic system. Attachment 5 includes a flow diagram of the processes contributing to Outfall 001 at the Facility.

6.2.2 Dilution Factor

EPA calculates available dilution to determine water quality based limitations in a NPDES permit. 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water lowest observed mean river flow for seven consecutive days, recorded over a 10-year recurrence interval, or 7-day 10-year low flow (7Q10). EPA calculated the 7Q10 for the Connecticut River at Outfall 001 based on data from the United States Geological Survey (USGS) low-flow frequency statistics for the nearest USGS gauging station to the Facility along the Connecticut River (station number 01170500 at Montague City, MA⁵) and the estimated drainage area for the Facility using the USGS StreamStats for Massachusetts watershed delineation tool.⁶ The 7Q10 flow obtained from the USGS was adjusted for the drainage area contributing to Outfall 001 (see Attachment 6). EPA used the final permitted flow limit to calculate available effluent dilution. The calculated dilution factor for the Facility is 1,691:1.

7. Derivation of Effluent Limits under the Federal CWA and the Commonwealth of Massachusetts' Water Quality Standards

7.1 Flow

The 2006 Permit authorized a monthly average of 0.15 MGD and required reporting the daily maximum flow of treated effluent through Outfall 001. From February 1, 2008 through February 28, 2013, the average monthly discharge from Outfall 001 ranged from 0.05 to 0.259 million gallons per day (MGD). The maximum daily flow reported ranged from 0.086 MGD (86,000 gallons per day (GPD)) to 0.549 MGD (549,000 GPD). These data indicate flow measurements in excess of the average monthly permitted well withdrawal and permitted monthly average flow limit during the permit term. The Facility's effluent discharge occurs year round and is not a seasonal discharge.

As described above, the applicant has requested to discharge up to a peak flow of 650,000 GPD of treated process wastewater to the Connecticut River as a result of expansion at the existing Facility. While the Facility has received a WMA permit for withdrawal up to 650,000 GPD from the three well fields, the 2006 Permit average monthly flow limit of 0.15 MGD has remained in effect through the administratively continued 2006 Permit. The Draft Permit flow limits take into account the groundwater withdrawal restrictions, the design capacity of the discharge pipe and treatment system, effects on pollutant loads resulting from increased flow, and the history of compliance with current permit limitations.

The Draft Permit includes a 0.65 MGD limit for maximum daily flow to ensure that the flow does not exceed the Facility's design flow capacity and well withdrawal permit. The Permittee must also continue to report average monthly flow. The Draft Permit includes a flow rate limit of 320 GPM for

⁵ USGS StreamStats National Data Collection Station Report for Station 01170500:
<http://streamstatsags.cr.usgs.gov/gagepages/html/01170500.htm>

⁶ USGS StreamStats for Massachusetts Interactive Map:
<http://water.usgs.gov/osw/streamstats/massachusetts.html>

each UV unit, for a total of 640 GPM, to ensure that the rate at which effluent is discharged does not exceed the design flow capacity of the wastewater treatment system.

As noted above, discharges of nitrogen to the Connecticut River are part of the out-of-basin contribution to the TMDL for Long Island Sound. A flow increase is expected to result in greater mass loading of nitrogen to the Connecticut River, as well as increases in the mass loading of Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD₅). As described below, while EPA is allowing a flow increase for this Facility, concentrations of nitrogen will be held at the current annual baseline average, and the concentration based limits for both TSS and BOD₅ will be maintained.

7.2 Total Suspended Solids (TSS)

TSS discharged to receiving waters may contribute to turbidity, oxygen depletion, or loading of nutrients and other pollutants. From February 1, 2008 through February 28, 2013, maximum daily TSS concentrations reported range from 5 to 210 mg/L and 3.88 to 103.7 pounds per day (lbs/day). Average monthly TSS reported concentrations ranged from 2.5 to 105 mg/L and 2.7 to 51.9 lbs/day.

The 2006 Permit contained maximum daily limits of 23.2 mg/L and 34.8 lbs/day and average monthly limits of 15.5 mg/L and 19.4 lbs/day for TSS. The concentration-based limits were derived from effluent data for the Facility and the mass-based limits were calculated using the flow limit included in the 2006 Permit. The concentration-based TSS limits are maintained in the Draft Permit and are more restrictive than other NPDES dischargers upstream of Chang Farms, namely the Publicly Owned Treatment Works (POTWs) in which secondary standards apply. The mass-based limits in the Draft Permit are calculated in a manner similar to production-based ELGs, using the design flow for the Facility, as follows:

Mass Loading (lbs/day) = Concentration Limit (mg/L) x Flow Limit (MGD) x 8.34 conversion factor

Therefore: Average Monthly = (15.5 mg/L) (0.65 MGD) (8.34) = 84 lbs/day

 Maximum Daily = (23.2 mg/L) (0.65 MGD) (8.34) = 126 lbs/day

Given that EPA is maintaining the concentration based limits, the high available dilution in the Connecticut River and in accordance with the exception to anti-backsliding under §402(o)(2)(A), EPA has determined that the mass-based TSS limits will not violate Massachusetts' WQS. EPA calculated the mass-based limits using the design flow capacity of the Facility. Further, these limits are sufficient to comply with the anti-degradation provisions in the Massachusetts WQS and policy implementing these provisions.

7.3 pH

From February 1, 2008 through February 28, 2013, the pH values reported for Outfall 001 range from 5.45 SU to 7.87 standard units (SU). Massachusetts Surface WQS, 314 CMR 4.00, for Class B waters require pH to be within the range of 6.5 to 8.3 SU and prohibit discharges that cause the in-stream pH to change more than 0.5 SU outside of the background range. The Draft Permit maintains a pH range of 6.5 to 8.3 SU at all times, and specifies that the pH cannot change the naturally occurring pH range by more than 0.5 SU, consistent with Massachusetts WQS.

7.4 Biological Oxygen Demand (BOD₅)

An excess of oxygen demanding substances (measured as BOD₅) can cause depletion of the in-stream dissolved oxygen levels thereby causing harm to aquatic life. From February 1, 2008 through February 28, 2013, BOD₅ reported concentrations ranged from 9.9 to 75 mg/L and mass-based values from 9 to 91.9 lbs/day. Average monthly BOD₅ reported concentrations ranged from 8.7 to 44.2 mg/L and 8.12 to 69 lbs/day.

The 2006 Permit contained maximum daily limits of 41.5 mg/L and 62.3 lbs/day and monthly limits of 26.6 mg/L and 33.3 lbs/day for BOD₅. As with TSS, the concentration-based BOD₅ limits being carried forward in the Draft Permit were derived from effluent data for the Facility and are also more restrictive than secondary treatment standards for POTWs. The mass-based limits in the Draft Permit are calculated in a manner similar to production-based ELGs, using the design flow for the Facility, as follows:

Mass Loading (lbs/day) = Concentration Limit (mg/L) x Flow Limit (MGD) x 8.34 conversion factor
Therefore: Average Monthly = (26.6 mg/L) (0.65 MGD) (8.34) = 144 lbs/day

Maximum Daily = (41.5 mg/L) (0.65 MGD) (8.34) = 225 lbs/day

EPA is maintaining the concentration based limits from the 2006 Permit. Given the high available dilution in the Connecticut River and in accordance with the exception to anti-backsliding under §402(o)(2)(A), the final mass-based BOD₅ limits, which are based on requested production design flow, will not violate Massachusetts' WQS. Further, these limits are sufficient to comply with the anti-degradation provisions in the Massachusetts WQS and policy implementing these provisions.

7.5 Temperature

As described above, heated water is used to irrigate sprouts during the production process on an 8-day cycle. Groundwater is passed through a heat exchanger at the Facility prior to use in the sprouting phase, which requires heating water in a tank using steam to 90°F. The subsequent growing phase requires an irrigation water temperature range from 66 to 70°F, which is heated with a plate heat exchanger and stored in a series of tanks prior to use. Following irrigation and prior to treatment in the wastewater treatment facility and discharge to the Connecticut River through Outfall 001, the process water is re-circulated through the heat exchanger to remove excess heat which is transferred to incoming well water. Massachusetts WQS for class B waters (314 CMR 4.05(3)(b)) pertaining to warm water fisheries which states:

- a. *"Temperature shall not exceed 83°F (28.3°C) in warm water fisheries. The rise in temperature due to a discharge shall not exceed...5°F (2.8°C) in rivers and streams designated as warm water fisheries (based on the minimum expected flow for the month);"* and
- b. *"natural seasonal and daily variations that are necessary to protect existing and designated uses shall be maintained. There shall be no changes from natural background conditions that would impair any use assigned to this Class, including those conditions necessary to protect normal species diversity, successful migration, reproductive functions or growth of aquatic organisms."*

The 2006 Permit did not include temperature monitoring requirements. Based on information provided in the Permittee's application, EPA requested additional information regarding temperature changes at the Facility in the 308 letter. Groundwater extracted from the well fields in use at the Facility averages 52 °F. The Permittee reported that from August 1, 2007 and November 30, 2010, the average temperature of the process water was 71°F. According to discharge temperature readings provided by the Permittee, the process water is discharged from the facility at a temperature range of 59 to 66°F. Given this information and the high available dilution in the Connecticut River (1,691:1), it is highly unlikely that discharges from the Facility could cause or contribute to a change in temperature (ΔT) in the Connecticut River and the discharge is not expected to cause or contribute to a downstream temperature in the Connecticut River greater than 83° F.

However, to verify that discharges from Outfall 001 do not cause a temperature rise of greater than 5° F or cause or contribute to a downstream temperature in the Connecticut River greater than 83° F as required by Massachusetts WQS, the Draft Permit contains a daily maximum temperature reporting requirement. In the event that temperature monitoring data indicate conditions which violate Massachusetts WQS, the permit may be modified pursuant to 40 C.F.R. § 122.62.

7.6 Bacteria

As the growing cells used in production are not sterile, they provide conditions where bacteria thrive. The bacteria, generally, are not biologically dependent on the sprouts but can become assimilated in time if allowed to remain in the system. The bacteria source has been identified as the seed beans themselves. The bacteria are part of a symbiotic system that the beans use to produce organic nitrogen for growth. As described above, this segment of the Connecticut River is listed in the *Massachusetts Year 2012 Integrated List of Waters* as impaired for *E. coli*.

The 2006 Permit required seasonal (April through October) monitoring for *E. Coli*. From April 1, 2008 through October 31, 2012 concentrations of *E. Coli* ranged from 1 to 1,000 colony forming units (cfu) per 100 mL. The 2006 Permit also included monthly average and daily maximum fecal coliform bacteria effluent limitations established using the criteria in the MA SWQS at 314 CMR 4.05 which were in effect at the time the permit was issued. Revisions to the bacteria criteria in the Massachusetts WQS were adopted on December 29, 2006 and approved by EPA on September 19, 2007. The WQS now include *E. coli* criteria for Class B waters. With the change in the Massachusetts Class B water quality criteria for bacteria, the Draft Permit includes an average monthly *E. Coli* limit, specified as a geometric mean of no more than 126 cfu per 100 mL, and a daily maximum limit of 409 cfu per 100 mL. The limits are based on state certification requirements under section 401 (a) (1) of the CWA, as described in 40 CFR 124.53 and 124.55.

E. Coli monitoring shall be continued weekly on a seasonal basis, April 1st through October 31st, which is consistent with other discharges to the Connecticut River and are the months in which primary and secondary contact recreation uses are expected to occur. The Draft Permit includes a requirement that the bacteria samples are collected at the same time that the TRC sample is collected. The Best Management Practices Plan requirements in the Draft Permit also include requirements for ultraviolet (UV) Disinfection System Operation and Maintenance to help ensure the system is operated using quality controls such that the discharge consistently meets the requirements for

bacteria. The use of the UV disinfection system is designed to decrease the discharge of bacteria to the Connecticut River and meet the requirements of the Massachusetts WQS.

7.7 Total Residual Chlorine (TRC)

Chlorine and chlorine compounds can be extremely toxic to aquatic life. As described above, the Facility uses groundwater from onsite well fields with chlorine to wash and soak beans, irrigate and wash sprouts, and wash and disinfect the Facility. The process water is concentrated using a 0.3 ppm chlorine solution. Chlorine is injected into the cold water tank on demand as the well water is pumped into it. The process wastewater from the washing, soaking and irrigating of beans and sprouts, and from the washing and disinfection of the Facility flows to the sump tank, is filtered, and undergoes UV treatment prior to being discharged to the Connecticut River. The presence of bacteria creates a need to disinfect Facility equipment after each growth cycle. The results of the most recent TRC testing completed in March 2011 indicates the monthly average TRC concentration for the effluent is 0.26 mg/L. The 2006 Permit limited TRC to 1.0 mg/L for both daily maximum and monthly average, monitored weekly.

Massachusetts WQS require the use of federal WQC where a specific pollutant could reasonably be expected to adversely affect existing or designated uses (314 CMR 4.05 (5)(e)). The National Recommended freshwater acute and chronic WQC for TRC are 19 µg/L (0.019 mg/L), and 11 µg/L (0.011 mg/L), respectively. Using the calculated available dilution in the Connecticut River (1,691:1), EPA calculated the TRC effluent limits as follows:

$$\begin{aligned}\text{Acute TRC limit} &= 19 \mu\text{g/L} * 1,691 = 32,129 \mu\text{g/L} \\ \text{Chronic TRC limit} &= 11 \mu\text{g/L} * 1,691 = 18,601 \mu\text{g/L}\end{aligned}$$

Because the dilution factor for this discharge is greater than 100, the resulting calculated TRC limit is greater than the 2006 Permit limit of 1.0 mg/L. However, the Draft Permit TRC limit of 1.0 mg/L has been maintained from the 2006 Permit to be consistent with the *Massachusetts Implementation Policy for the Control of Toxic Pollutants in Surface Waters*, 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 TRC shall not exceed 1.0 mg/L.

Therefore based on available data for effluent TRC concentrations as high as 1.04 mg/L, and because of the Facility's regular use of chlorine concentrations in excess of the applicable criteria, the Draft Permit maintains effluent TRC limits of 1.0 mg/L for both maximum daily and monthly average, with sampling required weekly. Monitoring for TRC will also continue twice per year in conjunction with WET testing.

No cleaning agents or biocides, except for those listed in Attachment 4, shall be used without written approval from the Regional Administrator and the Commissioner.

7.8 Nitrogen (Total Kjeldahl Nitrogen (TKN), Nitrate + Nitrite)

Excessive nitrogen in a water body can cause eutrophication, a condition in which aquatic plant and algal growth is excessive and can be toxic at elevated levels. Decomposition of plants and algae can

reduce instream dissolved oxygen concentrations below levels necessary to support aquatic life. Based on information provided in response to EPA's 308 letter, the main source of nitrogen in the Facility's discharge appears to be from the groundwater extracted from the original well field, west well field and east well field located beneath adjacent agricultural fields. The total nitrogen measured in influent samples collected on October 10, 2012 from the original well field, west well field and east well field was 15.5 mg/L, 9.50 mg/L, and 5.95 mg/L, respectively. On this date, the total nitrogen measured in the effluent was 9.84 mg/L and the total nitrogen measured in the Connecticut River immediately upstream of the influence of the discharge was 0.51 mg/L.

The 2006 Permit required monitoring for TKN, and nitrate plus nitrite nitrogen. From February 1, 2008 through February 28, 2013 average monthly and maximum daily concentrations of TKN ranged from 1.1 to 7.1 mg/L. Average monthly and maximum daily concentration ranges were the same because for the majority of reported values, only one sample was collected during the monitoring period. The average monthly and maximum daily concentrations of nitrate plus nitrite nitrogen ranged from 4.814 to 8.3 mg/L and 4.814 to 12.9 mg/L, respectively.

It has been determined that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including low dissolved oxygen. In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a 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 percent reduction from the baseline total nitrogen loading estimated in the TMDL. CTDEP also applied a threshold of 20 lbs/day (equivalent in impact to a 35 lbs/day threshold at facilities upstream in MA and NH) when imposing nitrogen controls on existing facilities. See *Nitrogen Control for Small Sewage Facilities* (CT DEP). EPA considers facilities discharging more than 35 lbs/day of total nitrogen to these receiving waters significant sources of nitrogen which could subject a facility to more stringent requirements or numeric limits for nitrogen.

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, based on recent information and including all POTWs in the watershed. Table 3 summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Table 3: Summary of Long Island Sound TMDL Nitrogen Loading

Basin	Baseline Loading* (lbs/day)	TMDL Target** (lbs/day)	Current Loading*** (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

* Estimated loading from TMDL (see Appendix 3 to CT DEP “Report on Nitrogen Loads to Long Island Sound” April 1998).

** Reduction of 25% from baseline loading.

*** Estimated current loading from 2004 – 2005 DMR data.

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met. However, discharges from this Facility were not included in the 2005 evaluation of loading.

EPA typically utilizes the average total nitrogen from the previous 12 consecutive samples to determine a Facility’s baseline nitrogen load. For the 2006 Permit term, the Facility reported TKN and nitrate plus nitrite at a monitoring frequency of quarterly for a total of 11 monthly average results consisting of both constituents of total nitrogen. EPA evaluated the estimated nitrogen loading based on current average concentration of total nitrogen (TKN + nitrate plus nitrite) and current flow limitation as well as under the Draft Permit flow limitation of 0.65 MGD using available nitrogen data collected from March 1, 2009 to February 28, 2013 shown in Table 4 below.

Table 4: Summary of Nitrogen Data for the Facility

Monitoring Period End Date	Total Nitrate + Nitrite (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (sum of Total Nitrate + Nitrite and Total Kjeldahl Nitrogen) (mg/L)
	Daily Max	Daily Max	Total
May-09	4.814	1.7	6.514
Feb-10	6.33	1.1	7.43
May-10	6.61	1.6	8.21
Aug-10	6.5	7.1	13.6
Nov-10	6.5	2.4	8.9
Feb-11	8.3	3.2	11.5
May-11	7.	1.9	8.9
Aug-11	5.2	5.2	10.4
Aug-12	6.4	1.9	8.3
Nov-12	7.1	1.7	8.8
Feb-13	12.9	3.3	16.2
Average			9.89

Using these data, the Facility’s nitrogen mass load is as follows:

Mass Loading (lbs/day) = Average N Concentration (mg/L) x Flow (MGD) x 8.34 conversion factor

Therefore: Mass Loading, current flow = (9.89 mg/L) (0.15 MGD) (8.34) = 12.4 lbs/day

And, Mass Loading, 0.65 MGD = (9.89 mg/L) x (0.65 MGD) x (8.34) = 53.6 lbs/day

These loadings indicate that the Facility will not only exceed the baseline (i.e., 12.4 lbs/day) under increased flow if the 12 month concentrations are similar to current quarterly concentrations, but discharges also exceed the threshold of 35 lbs/day for nitrogen. Therefore, the Draft Permit requires the Facility to maintain the current mass discharge loading of total nitrogen (i.e., 12.4 lbs/day), and monitor TKN and nitrate plus nitrite at a monitoring frequency of monthly. This is an increased monitoring frequency. Compliance with the baseline load will be calculated on an annual basis.

Because a flow increase is expected to result in an increased loading of nitrogen, EPA anticipates the Facility will need to address nitrogen removal in order to comply with the nitrogen requirements in the Draft Permit. In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over Connecticut River baseline loadings, EPA has included a condition in the Draft Permit requiring the Permittee to evaluate methods of operating its plant to address the removal of nitrogen, and to describe optimization efforts. This requirement is described further in Section 7.12 below.

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. In the event of a revised TMDL, nitrogen monitoring data indicating the need for additional nitrogen limitations, or other new information, the permit may be modified pursuant to 40 C.F.R. § 122.62.

7.9 Total Phosphorus

Phosphorus, like nitrogen, can reduce instream dissolved oxygen concentrations below levels necessary to support aquatic life, creating poor habitat for fish and other aquatic animals. Massachusetts WQS include narrative nutrient criteria at 314 CMR 4.05(5)(c), requiring that “Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site specific criteria developed in a TMDL or as otherwise established by the Department pursuant to 314 CMR 4.00. Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses.”

EPA has published national guidance documents that contain recommended total phosphorus criteria and other indicators of eutrophication. EPA's Quality Criteria for Water 1986 (the Gold Book) recommends, to control eutrophication, that in-stream phosphorus concentrations should be less than 100 µg/l (0.1 mg/L) in streams or other flowing waters not discharging directly to lakes or impoundments.

More recently, EPA released Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published ecoregion-specific criteria represent conditions in waters minimally impacted by human activities, and thus representative of water without cultural eutrophication. The Facility is within Ecoregion XIV, Eastern Coastal Plain, Northeastern Coastal Zone. Recommended criteria for this

Ecoregion are found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV, published in December, 2001, and includes a total phosphorus criterion of 23.75 µg/l (0.024 mg/L).

EPA has employed the Gold Book-recommended concentration (0.1 mg/L) to interpret the state's narrative standards for nutrients. The Gold Book value is based on effects as opposed to the ecoregional criterion, which was developed on the basis of reference conditions. EPA opted for the effects-based approach because it is often more directly associated with an impairment to a designated use (i.e. fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e. water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. chlorophyll a) associated with designated use impairments. Reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregion class. Specifically, reference conditions presented are based on the 25th percentile of all nutrient data, including a comparison of reference conditions for the aggregate ecoregion versus subcoregions (see Ecoregional Nutrient Criteria at vii). These values are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions. Thus, while reference conditions, which reflect minimally disturbed conditions, may meet the requirements necessary to support designated uses, they may also *exceed* the water quality necessary to support such requirements.

EPA's analysis accounted for upstream concentrations of phosphorus in the Connecticut River. The *2003 Connecticut River Watershed Water Quality Assessment* presented ambient phosphorus concentrations for samples taken during April 2003 through September 2003 at Connecticut River Station 04A, located less than ½ mile upstream of Outfall 001 at the Route 116 bridge crossing between South Deerfield and Sunderland. Five samples were taken, with results varying from 0.008 mg/L to 0.029 mg/L with a median value of 0.016 mg/L. Because permit limits must protect receiving water during low flow conditions, 7Q10 flow of 1,101 MGD, and the median background value of 0.016 mg/L were used in the equation below. The following data is also used in the calculations: the maximum reported total phosphorus concentration of 0.33 mg/L and the design flow of 0.65 MGD. EPA used these data in a steady-state mixing equation to determine if the discharge has reasonable potential cause or contribute to a violation of WQC under critical conditions as follows:

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_r}$$

Where:

C_r	=	Concentration below outfall
Q_d	=	Discharge flow
C_d	=	Effluent concentration
Q_s	=	7Q10 flow
C_s	=	Upstream concentration
Q_r	=	Streamflow below outfall (effluent + upstream)

Therefore:

$$\begin{aligned} \text{Phosphorus:} &= \frac{(0.65 \text{ MGD} \times 0.33 \text{ mg/L}) + (1,101 \text{ MGD} \times 0.016 \text{ mg/L})}{1,101.65 \text{ MGD}} \\ &= 0.0162 \text{ mg/L} \end{aligned}$$

If the calculated concentration below the outfall exceeds 0.1 mg/L (the EPA-recommended Gold Book concentration) there is reasonable potential for the discharge to exceed water quality criteria and a phosphorus limit must be included in the permit. Since the calculated instream concentration is less than 0.1 mg/L, there is no reasonable potential to cause or contribute to an excursion above water quality criteria in the Connecticut River. Therefore, effluent limits are not required. However, to ensure that an increased flow does not result in increases in loading of phosphorus in the Connecticut River, the Draft Permit maintains average monthly and maximum daily monitoring requirements for total phosphorus.

7.10 Whole Effluent Toxicity Testing (LC₅₀)

The 2006 Permit included a Whole Effluent Toxicity (WET) acute LC₅₀ limit of $\geq 50\%$. A LC₅₀ limit of $\geq 50\%$ means that a sample of 50 % effluent shall cause no greater than or equal to a 50 % mortality rate to the test organisms in that effluent sample during an exposure of 48 hours. Testing was required two times a year (June and September) for the daphnid *Ceriodaphnia dubia*. From February 1, 2008 through February 28, 2013, the reported LC₅₀ was $\geq 100\%$ in five of seven tests completed and less than 50% in two of seven tests completed. In addition, the Permittee began reporting receiving water analytical chemistry in June 2012.

Sections 402(a)(2) and 308(a) of the CWA provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Under certain State narrative WQS, and Sections 301, 303 and 402 of the CWA, EPA and the States may establish toxicity-based limits to implement the narrative "no toxics in toxic amounts."

Massachusetts has narrative criteria in their water quality regulations (See Massachusetts 314 CMR 4.05(5)(e)) that prohibits toxic discharges in toxic amounts. The Draft Permit prohibits the addition of toxic materials or chemicals to the discharges and prohibits the discharge of pollutants in amounts that would be toxic to aquatic life. WET testing is conducted to determine whether certain effluents, often containing potentially toxic pollutants, are discharged in a combination which produces a toxic amount of pollutants in the receiving water. Therefore, toxicity testing is being used in conjunction with pollutant-specific control procedures to minimize the discharge of toxic pollutants.

MassDEP in its "Implementation Policy for the Control of Toxic Pollutants in Surface Waters" (February 23, 1990) ("Toxics Policy") sets forth toxicity limits according to dilution factors based on perceived risk. For dilution in the low risk category ($>1,000:1$), Massachusetts' Toxics Policy requires testing twice per year for two species when there is reasonable potential for discharges to exceed applicable criteria.

The dilution factor determined for the facility is 1,691:1. For discharges with dilution greater than 100 the end-of-pipe effluent limit established in the Toxics Policy for acute effects in the mixing zone is 2.0 toxic units, or an LC₅₀ of 50%. To determine whether discharges from the Facility have reasonable potential to exceed this level of toxicity, EPA converted the WET test results for the Facility based on the definition of a toxic unit, as follows:

$$\text{T.U. Equivalent} = \frac{100}{\text{LC}_{50}}$$

Therefore:

Monitoring Period End Date	LC ₅₀ Static 48Hr Acute Ceriodaphnia	Toxic Units Equivalent
	%	T.U.
06/30/2007	100	1
09/30/2007	100	1
06/30/2008	100	1
09/30/2008	40.61	2.46
06/30/2009	100	1
09/30/2009	43	2.33
06/30/2010	100	1

Using the toxic unit equivalents calculated above, EPA then determined the 99th percentile projected effluent concentration to be 3.46 toxic units, or an LC₅₀ of 28.9%. When compared to the end-of-pipe effluent limit established in the Massachusetts WQS Toxics Policy, the effluent has reasonable potential to exceed 2.0 toxic units. Therefore, WET limits are required.

The regulations at 40 CFR Part 122.44(d)(ii) state, "*When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and non-point sources of pollution...(including) the sensitivity of the species to toxicity testing...*" The Permittee has violated the existing WET limit for LC₅₀≥50% on multiple occasions. Therefore, toxicity is indicated in the effluent. It is unclear at this time what individual pollutant or combination of pollutants may be contributing to this toxicity.

Therefore, the Draft Permit maintains the acute WET limit of LC₅₀≥50%. Acute WET testing is required twice per year and testing for an additional species has been added. In addition, the Draft Permit requires the Permittee complete a Toxicity Reduction Evaluation within one year of the effective date of the permit to identify the potential sources of toxicity in the effluent (see Section 7.12, below, and Part D.2. of the Draft Permit for additional information). The Draft Permit further clarifies that testing is required for **effluent and dilution water**. The Permittee must collect the dilution water sample from the Connecticut River, at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. In the case where the Permittee is approved to use alternate dilution water, an additional receiving water control (0% effluent) must still be tested. To clarify the effluent characteristics required for this testing, EPA has included WET parameters on the DMRs and on pages 3 and 4 of the Draft Permit. These requirements maintain the monitoring frequency for calcium and magnesium in conjunction with WET testing, because of the

presence of these elements in nutrient solution and chemical agents used at the Facility. Compliance with these requirements will demonstrate compliance with the Massachusetts WQS for toxicity.

7.11 Best Management Practices Plan

Pursuant to Section 304(e) of the CWA and 40 CFR §125.103(b), best management practices (BMPs) may be expressly incorporated into a permit on a case-by-case basis where necessary to carry out Section 402(a)(1) of the CWA. Although relevant portions of other environmental plans, as appropriate, can be incorporated into the BMP Plan by reference, the BMP Plan should be a comprehensive, stand-alone document. To control activities or operations, which could contribute pollutants to waters of the United States via process water discharges at the Facility, the 2006 Permit required the Permittee to develop a BMP Plan containing BMPs appropriate for the Facility. The Draft Permit requires the Facility to continue to update and implement its BMP Plan by selection, design, installation, and implementation of control measures (including BMPs) to meet the following non-numeric requirements and meet the other limits which apply to the outfall.

1. Monitoring Program
2. Preventative Maintenance
3. Pollutant Minimization
4. Good Housekeeping
5. Spill Prevention
6. Employee Training
7. Visual Inspections
8. Recordkeeping and Internal Reporting Procedures
9. Material Management
10. Data Validation
11. Annual Assessment
12. Corrective Action
13. Consistency Review
14. Amending the BMP Plan

The Draft Permit specifies considerations when selecting and designing control measures. This includes, but is not limited to considerations relating to effectiveness, potential impacts to the receiving water, reducing in-stream impacts of erosive flows, improving groundwater recharge, stream base flows and water quality, and minimizing the discharge of pollutants. Chang Farms last updated its BMP Plan, “Chang Farm WWTP-QAPP Plan” on May 31, 2012.

Generally, BMPs should include processes, procedures, schedules of activities, prohibitions on practices, and other management practices that prevent or reduce the discharge of pollutants. A copy of the most recent BMP Plan must be kept at the Facility and be available for inspection by EPA and MassDEP. The BMP Plan is a supporting element to any numerical effluent limitation which minimizes the discharge of pollutants through the proper operation of the Facility. Consequently, the BMP Plan is as equally enforceable as the numerical limits and other requirements of the Draft Permit. See **Part I.A.19.** of the Draft Permit for specific BMP Plan requirements.

7.12 Special Conditions

The Draft Permit requires the Facility to conduct inspections, complete assessment(s) and/or take corrective action in regard to several specific narrative requirements. Each requirement has a specific deadline and effective date detailed in the Draft Permit. These conditions include the following:

1. Nitrogen Evaluation and Minimization Program: the purpose of this analysis is to address loading of nitrogen to the Connecticut River and ultimately to Long Island Sound. The requirements include quantifying nitrogen loading, evaluating and minimizing sources of nitrogen, designing and implementing control measures or alterations needed in the current treatment system at the Facility to address the removal of nitrogen and adopting practices that will maintain such removal.
2. Toxicity Reduction Evaluation: this evaluation requires a thorough review of pollutant sources, as well as toxic and synergistic effects of individual pollutants. It further requires evaluation of methods of operating the Facility or the existing wastewater treatment facility in order to reduce specific pollutants identified as having a toxic effect on the overall effluent. It requires a summary of modifications to the control measures that are necessary to meet effluent limits in the Draft Permit and the completion of activities related to achieving reduction of specific pollutants; where treatment system modification is necessary, such as de-chlorination of the effluent, such treatment is expected to be implemented within the timeframe specified in the Draft Permit.

8. Essential Fish Habitat

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, such as waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (16 U.S.C. § 1802(10)). "Adversely impact" means any impact which reduces the quality and/or quantity of EFH (50 CFR §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 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.

The Connecticut River system has been designated as EFH for Atlantic salmon (*Salmo salar*). The last remnant stock of Atlantic salmon indigenous to the Connecticut River is believed to have been extirpated by the early 1800's. However, an active effort was undertaken throughout the Connecticut River system since 1967 to restore this historic run. EPA is also aware that the longer-term status of the Atlantic salmon population following the U.S. Fish and Wildlife Service decision to terminate the federal Atlantic salmon restoration program in the watershed is unclear. This stocked anadromous EFH species may pass in the vicinity of the discharge either on the migration of juveniles downstream to Long Island Sound or on the return of adults to upstream areas. The area of the discharge on the Connecticut River mainstem, approximately 12 miles downstream from the Turners Falls Dam and approximately 24 miles upstream from the Holyoke Dam, is not judged to be suitable

for spawning, which is likely to occur in tributaries where the appropriate gravel or cobble riffle substrate can be found.

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

- The quantity of the discharge from the Facility is small (0.65 MGD) relative to the Connecticut River flow;
- The available dilution in the Connecticut River for the Facility discharge is high (1,691:1);
- The facility withdraws no water from the Connecticut River; therefore no life stages of Atlantic salmon are vulnerable to impingement or entrainment from this facility;
- The Connecticut River is approximately 700 feet wide in the vicinity of the Facility's discharge, providing a large zone of passage for migrating Atlantic salmon that is unaffected by the discharge;
- EPA has included numeric and narrative requirements to limit increases in the discharge of nutrients and bacteria to ensure protection of designated uses and prevent degradation;
- The technology based limits established for TRC are more stringent and specifically protective of aquatic organisms than those based on water quality criteria;
- Acute toxicity testing has been increased to include two species twice times per year and a Toxicity Reduction Evaluation is required; and
- The permit prohibits any violation of Massachusetts WQS.

EPA believes that the conditions and limitations contained within the draft permit adequately protect all aquatic life, including those species with EFH designation in the Connecticut River system. Impacts associated with issuance of this permit to the EFH species, their habitat and forage, have been minimized to the extent that no significant adverse impacts are expected. Further mitigation is not warranted. If adverse impacts to EFH are detected because of this permit action, or if new information is received that changes the basis for EPA's conclusion, NMFS will be notified and an EFH consultation will be initiated.

9. Endangered Species Act

Under Section 7(a) of the Endangered Species Act, every federal agency is required to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize federally listed endangered or threatened species of fish, wildlife, or plants, or result in the adverse modification of critical habitat of such species. EPA initiates consultation concerning listed species under their purviews with the United States Fish and Wildlife Service (USFWS) for freshwater species, and the National Marine Fisheries Service (NMFS) for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in Franklin County to determine if the issuance of this NPDES permit could potentially impact any such listed species. According to the USFWS, two species or critical habitats are listed within Franklin

County.⁷ Northeastern bulrush is present in Montague and Warwick and is not expected to be impacted by this discharge in South Deerfield. The Dwarf Wedge mussel is present in the Mill River in Whatley. Based on *The Dwarf Wedge mussel Waters of Massachusetts* map⁸ dated August 27, 2007, this species is not likely to occur in the mainstem of the Connecticut River in the vicinity of the discharge.

The two endangered species of anadromous fish which occur in Massachusetts, shortnose sturgeon (*Acipenser brevirostrom*) and Atlantic sturgeon (*Acipenser oxyrinchus*), are found in the Connecticut River. According to a NMFS letter dated December 19, 2011⁹ for the Chicopee Water Pollution Control Facility discharge to the Connecticut River, the Holyoke Dam separates shortnose sturgeon in the Connecticut River into an upriver group (above the Dam) and a lower river group that occurs below the Dam to Long Island Sound. NMFS determined that adult and juvenile shortnose sturgeon are likely to occur in the vicinity of the Chicopee facility outfall year round, but further determined that Early Life Stages are less likely to be observed in the Connecticut River in the vicinity of the Chang Farms Facility, since spawning occurs further upstream in the Montague area near the confluence of the Deerfield and Connecticut Rivers.

The Facility is located approximately 24 river miles upstream of the Holyoke Dam and approximately 9.5 river miles downstream of the confluence of the Deerfield River with the Connecticut River discussed in the paragraph above. Based on this assessment and the expected normal distribution of these species, it is highly unlikely that they would be present in the vicinity of this discharge. Therefore, consultation with NMFS under Section 7 of the ESA is not required.

10. Monitoring

The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

The Draft Permit includes new provisions related to Discharge Monitoring Report (DMR) submittals to EPA and the State. The Draft Permit requires that, no later than one year after the effective date of the permit, the Permittee submit all monitoring data and other reports required by the permit to EPA using NetDMR, unless the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports (“opt out request”). EPA notes that the Permittee currently reports electronically using NetDMR.

⁷Listing for Franklin County in *Federally Listed Endangered and Threatened Species in Massachusetts* at http://www.fws.gov/newengland/EndangeredSpec-Consultation_Project_Review.htm

⁸*The Dwarf Wedge mussel Waters of Massachusetts* map available at http://www.fws.gov/newengland/pdfs/MA_DWM.pdf

⁹ December 19, 2011, Letter from Patricia A. Kurkul, Regional Administrator, NOAA, National Marine Fisheries Service, Northeast Region, to John H. Nagle, EPA Region 1 (“NOAA’s December 19, 2011, Chicopee WPCF Consultation Letter”) (addressing ESA issues concerning EPA’s proposed NPDES permit for the Chicopee, MA, WPCF).

NetDMR is a national web-based tool for regulated Clean Water Act permittees to submit DMRs electronically via a secure Internet application to EPA through the Environmental Information Exchange Network. NetDMR allows participants to discontinue mailing in hard copy forms under 40 CFR § 122.41 and § 403.12. EPA currently conducts free training on the use of NetDMR, and anticipates that the availability of this training will continue to assist permittees with the transition to use of NetDMR. NetDMR can be accessed at <http://www.epa.gov/netdmr>. Further information about NetDMR, including contacts for EPA Region 1, information on upcoming trainings, and contact information for Massachusetts, is provided on this website.

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month using NetDMR, no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA as an electronic attachment to the DMR. Once a Permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees must continue to send hard copies of reports other than DMRs to MassDEP until further notice from MassDEP.

The Draft Permit also includes an “opt-out” requests process. Permittees who believe they cannot use NetDMR due to technical or administrative infeasibilities, or other logical reasons, must demonstrate the reasonable basis that precludes the use of NetDMR. These permittees must submit the justification, in writing, to EPA at least sixty (60) days prior to the date the facility would otherwise be required to begin using NetDMR. Opt-outs become effective upon the date of written approval by EPA and are valid for twelve (12) months from the date of EPA approval. The opt-outs expire at the end of this twelve (12) month period. Upon expiration, the Permittee must submit DMRs and reports to EPA using NetDMR, unless the Permittee submits a renewed opt out request sixty (60) days prior to expiration of its opt out, and such a request is approved by EPA.

Until electronic reporting using NetDMR begins, or for those permittees that receive written approval from EPA to continue to submit hard copies of DMRs, the Draft Permit requires that submittal of DMRs and other reports required by the permit continue in hard copy format.

11. State Certification Requirements

EPA may not issue a permit unless the MassDEP 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 Massachusetts WQS or unless state certification is waived. The staff of the MassDEP 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.

12. Comment Period, Hearing Requests, and Procedures 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 Shauna Little, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Section, 5 Post Office Square, OEP 06-1, Boston, Massachusetts 02109-3912. 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 §124.12 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. 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.

13. EPA and MassDEP Contacts

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 the EPA and MassDEP contacts below:

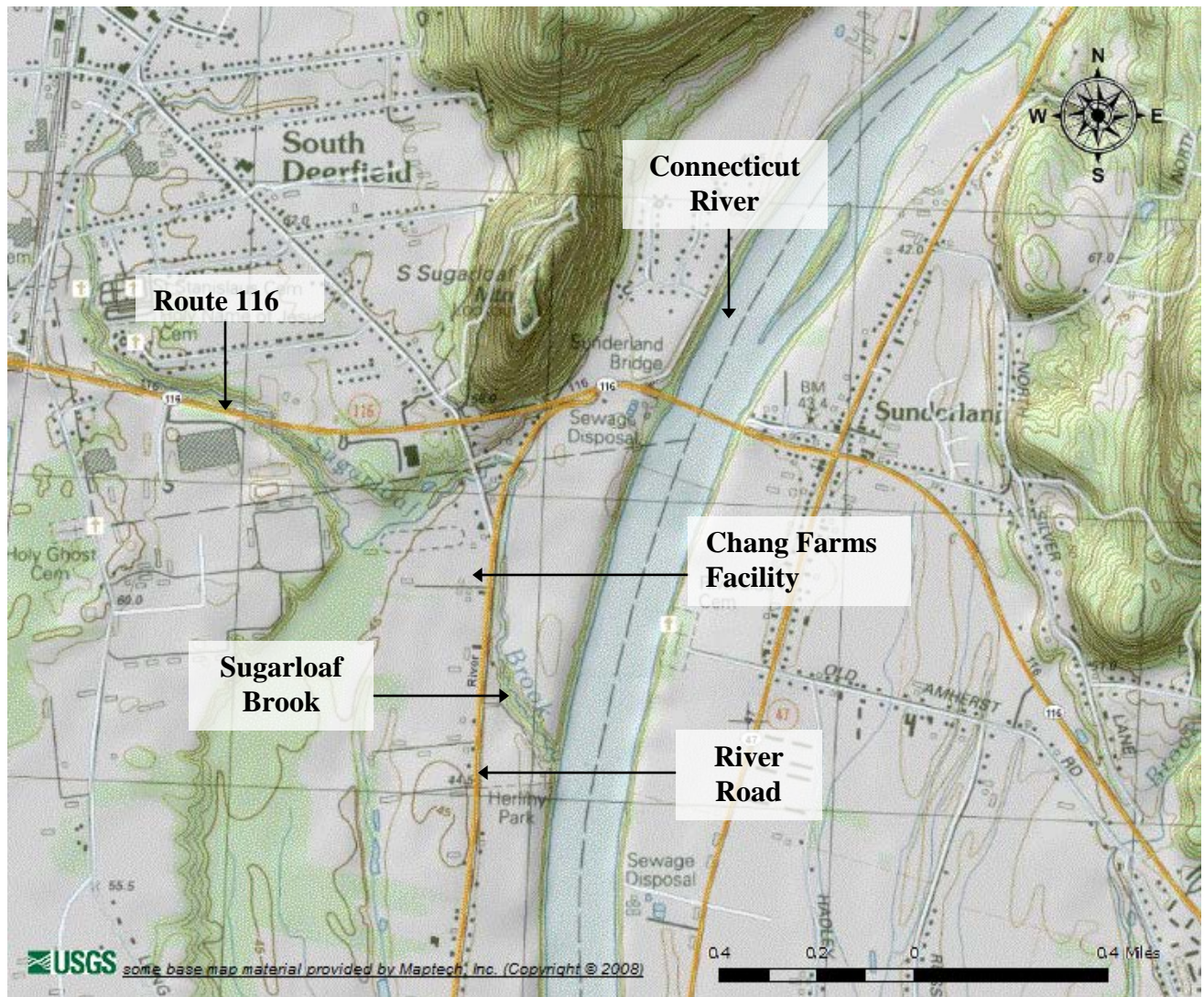
Shauna Little, EPA– Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, Massachusetts 02109-3912
Telephone: (617) 918-1989
FAX: (617) 918-0989
Email: little.shauna@epa.gov

Kathleen Keohane, MassDEP
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608
Telephone: (508) 767-2856
FAX: (508) 791-4131
Email: kathleen.keohane@state.ma.us

8/7/2013

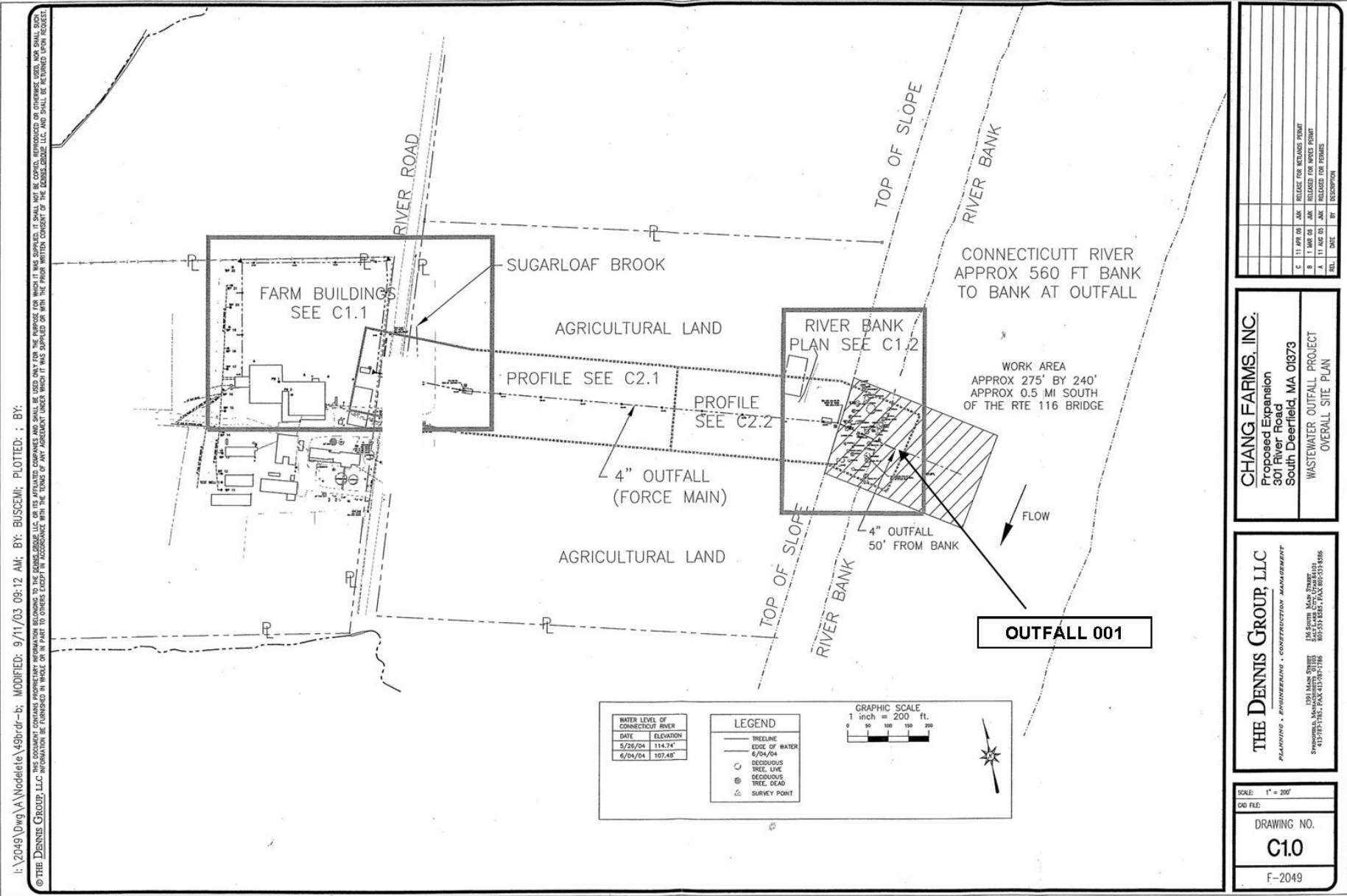
Ken Moraff, Acting Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Attachment 1: Chang Farms Location Map



Source: <http://water.usgs.gov/osw/streamstats/massachusetts.html>

Attachment 2: Chang Farms Site Plan



Attachment 3: Discharge Monitoring Data

CHANG FARMS - MA0040207 Outfall Serial Number 001 – Sampling Location A Monthly Reporting												
Monitoring Period End Date	Flow (MGD)		TSS (lbs/day)		TSS (mg/L)		pH (SU)		BOD (lbs/day)		BOD (mg/L)	
	Mo Avg	Daily Max	Mo Avg	Daily Max	Mo Avg	Daily Max	Min	Max	Mo Avg	Daily Max	Mo Avg	Daily Max
Feb-08	---	---	---	---	18.5	22.	---	---	---	---	20.7	21.
Mar-08	---	---	---	---	6.	12.	---	---	---	---	11.	12.7
Apr-08	---	---	---	---	6.	12.	---	---	---	---	13.2	16.9
May-08	---	---	---	---	32.5	65.	---	---	---	---	14.	16.
Jun-08	---	---	---	---	105.	210.	---	---	---	---	44.2	75.
Jul-08	---	---	---	---	7.3	7.5	---	---	---	---	31.2	48.
Aug-08	---	---	---	---	23.	35.	---	---	---	---	36.	50.
Sep-08	---	---	---	---	5.	5.	---	---	---	---	12.6	12.6
Oct-08	---	---	---	---	5.	5.	---	---	---	---	10.8	10.8
Nov-08	---	---	---	---	5.	5.	---	---	---	---	17.4	17.4
Dec-08	---	---	---	---	8.	8.	---	---	---	---	9.9	9.9
Jan-09	0.101	0.518	5.9	5.9	7.	7.	5.76	7.87	24.3	24.3	28.8	28.8
Feb-09	0.108	0.108	---	---	---	---	6.06	6.26	---	---	---	---
Mar-09	0.111	---	5.09	5.55	5.5	6.	6.11	6.35	15.92	10.55	17.2	11.4
Apr-09	0.106	0.113	6.63	6.63	7.5	7.5	5.81	6.35	12.73	12.73	14.4	14.4
May-09	0.106	0.117	6.63	6.63	7.5	7.5	5.82	6.11	12.73	12.73	14.4	14.4
Jun-09	0.053	0.452	11.05	11.05	25.	25.	5.94	6.47	9.41	9.41	21.3	21.3
Jul-09	0.05	0.111	---	---	---	---	5.45	5.73	---	---	---	---
Aug-09	0.077	0.086	25.	16.1	25.	25.	5.55	5.99	11.69	13.	18.2	20.3
Sep-09	0.103	0.103	12.88	16.1	15.	25.	5.47	5.76	8.12	9.28	9.45	10.8
Oct-09	0.093	---	19.39	19.39	25.	25.	5.67	6.67	14.46	16.91	18.65	21.8
Nov-09	0.093	---	3.88	3.88	5.	5.	5.61	6.08	9.31	9.31	12.	12.
Dec-09	0.112	0.125	4.9	5.14	5.3	5.5	5.71	6.08	10.27	10.27	11.	11.
Jan-10	0.099	0.128	18.4	29.7	22.3	36.	5.73	5.92	14.	18.	17.	22.
Feb-10	---	---	---	---	---	---	---	---	---	---	---	---
Mar-10	0.102	0.12	6.7	7.9	7.9	9.3	5.79	6.86	9.	9.	11.	11.
Apr-10	0.122	0.134	5.1	5.1	5.	5.	5.86	6.58	11.1	15.3	11.	15.
May-10	0.12	0.549	16.5	20.	16.5	20.	5.94	7.87	14.5	16.	14.5	16.
Jun-10	0.141	0.262	9.2	9.4	7.8	8.	5.99	6.38	18.8	20.	16.	17.
Jul-10	0.104	0.124	6.5	8.7	7.5	10.	5.94	6.59	11.7	13.8	13.5	16.
Aug-10	0.109	0.143	2.7	5.4	3.	6.	6.32	6.58	11.4	11.8	12.5	13.
Sep-10	0.132	0.162	8.8	17.6	8.	16.	6.32	6.6	48.8	91.9	17.1	29.
Oct-10	0.136	0.152	3.4	6.8	3.	6.	6.39	6.57	18.8	25.	16.5	22.
Nov-10	0.139	0.156	9.9	11.6	8.5	10.	6.5	6.65	14.7	18.5	12.7	16.
Dec-10	0.158	0.197	10.6	21.1	8.	16.	6.41	6.62	30.5	51.4	23.2	39.
Jan-11	0.101	0.172	8.	8.4	9.5	10.	6.43	7.06	13.9	15.2	16.5	18.
Feb-11	0.164	0.19	20.5	24.6	15.	18.	6.5	6.6	58.1	78.	42.5	57.
Mar-11	0.18	0.214	25.5	34.5	17.	23.	6.15	6.59	47.3	51.	31.5	34.
Apr-11	0.157	0.177	3.8	7.7	3.5	7.	6.08	6.7	11.3	14.4	8.7	11.
May-11	0.154	0.19	10.9	11.6	8.5	9.	5.84	6.36	28.9	32.1	22.5	25.

NPDES Permit No. MA0040207

Monitoring Period End Date	Flow (MGD)		TSS (lbs/day)		TSS (mg/L)		pH (SU)		BOD (lbs/day)		BOD (mg/L)	
	Mo Avg	Daily Max	Mo Avg	Daily Max	Mo Avg	Daily Max	Min	Max	Mo Avg	Daily Max	Mo Avg	Daily Max
Jun-11	0.148	0.169	.	9.9	.	8.	6.3	6.5	42.	23.4	34.	19.
Jul-11	0.138	0.149	9.8	11.5	8.5	10.	6.22	6.48	27.6	34.5	24.	30.
Aug-11	0.142	0.183	14.2	18.9	12.	16.	6.54	6.74	17.2	22.5	14.5	19.
Sep-11	0.188	0.222	20.4	---	13.		6.5	6.7	69.	---	44.	---
Oct-11	0.172	0.192	---	---	---	---	6.54	6.72	---	---	---	---
Nov-11	0.173	0.192	26.	26.	18.	18.	6.59	6.78	54.8	54.8	38.	38.
Dec-11	0.182	0.201	---	---	---	---	6.58	6.77	---	---	---	---
Jan-12	0.176	0.195	31.	63.1	21.5	43.	6.6	6.8	28.9	39.6	20.	27.
Feb-12	0.198	0.239	9.1	9.9	5.5	6.	6.4	6.88	21.5	24.8	13.	15.
Mar-12	0.198	0.238	20.7	26.4	12.5	16.	6.63	6.78	34.7	36.3	21.	22.
Apr-12	---	---	8.	8.7	5.5	6.	6.68	6.79	15.	16.	10.3	11.
May-12	0.173	0.198	10.	20.2	7.	14.	6.67	6.77	21.6	28.8	15.	20.
Jun-12	0.179	0.214	.	.	.	.	6.66	6.8	26.1	26.9	17.5	18.
Jul-12	0.187	0.229	5.5	10.9	3.5	7.	6.61	6.95	28.9	32.8	18.5	21.
Aug-12	0.209	0.251	8.7	17.4	5.	10.	6.66	6.91	53.2	55.8	30.5	32.
Sep-12	0.236	0.265	4.9	9.8	2.5	5.	6.73	6.9	36.4	37.4	18.5	19.
Oct-12	0.238	0.256	41.7	59.5	21.	30.	6.77	6.98	54.6	79.4	27.5	40.
Nov-12		0.277	16.2	19.4	7.5	9.	6.75	7.0	50.6	53.8	23.5	23.5
Dec-12	0.259	0.278	51.9	103.7	24.	48.	6.78	6.95	33.2	51.8	15.4	24.
Jan-13	0.259	0.291	10.8	21.6	5.	10.	6.79	7.02	33.5	43.2	15.5	20.
Feb-13	0.25	0.279	7	14	3.4	6.7	6.76	6.96	37.53	41.7	18	20
2006 Permit Limits	0.15	Report	19.4	34.8	15.5	23.2	6.5	8.3	33.3	62.3	26.6	41.5
Min	0.05	0.086	2.7	3.88	2.5	5	5.45	5.73	8.12	9	8.7	9.9
Max	0.259	0.549	51.9	103.7	105	210	6.79	7.87	69	91.9	44.2	75
Avg	0.148	0.207	13.1	18.1	12.5	18.5	6.24	6.64	26.2	29.8	19.5	22.5
Std Dev	0.052	0.098	10.33	18.32	14.78	29.24	0.409	0.42	16.18	20.52	9.05	12.66
# of measurements	47	45	43	43	54	54	49	49	45	44	56	55

--- = Data not available or not validated

. = Not detected above laboratory practical quantitation limits (PQL)

CHANG FARMS - MA0040207 Outfall Serial Number 001 – Sampling Location Q Quarterly Reporting						
Monitoring Period End Date	Total Nitrate + Nitrite (mg/L)		Total Kjeldahl Nitrogen (mg/L)		Total Phosphorus (mg/L)	
	Mo Avg	Daily Max	Mo Avg	Daily Max	Mo Avg	Daily Max
Feb-08	---	---	---	---	---	---
May-08	6.94	6.94	.	.	0.15	0.15
Aug-08	5.65	5.65	.	.	0.08	0.08
Nov-08	---	---	---	---	---	---
Feb-09	---	---	---	---	---	---
May-09	4.814	4.814	1.7	1.7	0.1	0.1
Aug-09	---	---	---	---	---	---
Nov-09	---	---	---	---	---	---
Feb-10	6.33	6.33	1.1	1.1	0.01	0.01
May-10	6.61	6.61	1.6	1.6	0.02	0.02
Aug-10	6.5	6.5	7.1	7.1	0.14	0.14
Nov-10	6.5	6.5	2.4	2.4	0.21	0.21
Feb-11	8.3	8.3	3.2	3.2	0.33	0.33
May-11	7.	7.	1.9	1.9	0.14	0.14
Aug-11	5.2	5.2	5.2	5.2	0.2	0.2
Nov-11	---	---	---	---	---	---
Feb-12	---	---	---	---	---	---
May-12	5.6	5.6	.	.	0.082	0.082
Aug-12	6.4	6.4	1.9	1.9	0.15	0.15
Nov-12	7.1	7.1	1.7	1.7	0.3	0.3
Feb-13	6.2	12.9	1.6	3.3	0.15	0.31
2006 Permit Limits	Report	Report	Report	Report	Report	Report
Min	4.814	4.814	1.1	1.1	0.01	0.01
Max	8.3	12.9	7.1	7.1	0.33	0.33
Avg	6.37	6.85	2.67	2.83	0.16	0.15
Std Dev	0.877	1.950	1.849	1.822	0.102	0.092
# of measurements	14	14	11	11	14	14

--- = Data not available or not validated

. = Not detected above laboratory PQL

CHANG FARMS - MA0040207 Outfall Serial Number 001 Whole Effluent Toxicity Testing (June and September)	
Monitoring Period End Date	<i>Ceriodaphnia dubia</i> (% survival) LC ₅₀
Effluent Sample	Monthly Min
Jun-08	---
Sep-08	---
Jun-09	---
Sep-09	100
Jun-10	100
Sep-10	100
Jun-11	40.61
Sep-11	>100
Jun-12	43
Sep-12	100

--- = Data not available or not validated

CHANG FARMS - MA0040207				
Outfall Serial Number 001				
Seasonal Reporting (April through October)				
Monitoring Period End Date	Fecal coliform (CFU/100mL)		E. coli (CFU/100mL)	
	Mo Avg	Daily Max	Mo Avg	Daily Max
Apr-08	.	.	---	---
May-08	26.	100.	---	---
Jun-08	2633.	6200.	---	---
Jul-08	805.	2800.	---	---
Aug-08	47.	90.	---	---
Sep-08	14.	19.	---	---
Oct-08	---	---	---	---
Apr-09	20.	40.	---	---
May-09	71.	180.	8.	8.
Jun-09	10.	12.	---	---
Jul-09	105.	105.	---	---
Aug-09	158.	440.	4.	4.
Sep-09	265.	770.	20.	20.
Oct-09	1266.	6200.	E	
Apr-10	678.	2000.	10.	10.
May-10	510.	2000.	10.	10.
Jun-10	173.	480.	---	---
Jul-10	2110.	6300.	10.	10.
Aug-10	35.	100.	.	.
Sep-10	163.	329.	.	.
Oct-10	598.	1600.	600.	600.
Apr-11	.	.	.	.
May-11	10.	10.	10.	10.
Jun-11	2.	10.	.	.
Jul-11	90.	180.	.	.
Aug-11	436.	2000.	40.	40.
Sep-11	90.	150.	10.	10.
Oct-11	58.	180.	---	---
Apr-12	1200.	1600.	1000.	1000.
May-12	2550.	11000.	200.	200.
Jun-12	.	.	4.	4.
Jul-12	.	.	50.	50.
Aug-12	.	2.	14.	14.
Sep-12	.	.	2.	2.
Oct-12	4.	10.	1.	1.
2006 Permit Limits	200	400	Report	Report
Min	2	2	1	1
Max	2633	11000	1000	1000
Avg	504.54	1548.52	117.24	117.24
Std Dev	767.64	2634.10	270.61	270.61
# of measurements	28	29	17	17

--- = Data not available or not validated

. = Not detected above laboratory PQL

Attachment 4: Summary of Chang Farms Chemical Usage

Chemicals which may be discharged to the Connecticut River

Product Name	Company	Product Use	Estimated Usage
Calcium Hypochlorite	Zep	Replacement for Powder Bleach Listed in Table 1 Below	1lb/day
Sodium Hypochlorite Solution	Zep	Replacement for Powder Bleach Listed in Table 1 Below	1lb/day
ZEP DOOR SAN (Disinfectant, Sanitizer)	Zep	Replacement for F-48 Liquid Acid Cleaner & Sanitizer listed in Table 1 Below	8 oz/day
ZEP FORMULA 4089 (Concentrated, Chlorinated, Foaming, Highly Alkaline Cleaner)	Zep	Replacement for G-182A Liquid Chlorinated Alkaline Foam Cleaner listed in Table 1 Below	1 gallon/day
ZEP FS AMINE Z (Sanitizer, Disinfectant, Deodorizer)	Zep	Replacement for F-48 Liquid Acid Cleaner & Sanitizer listed in Table 1 Below	8 oz/day

Usage	Product Name	Chemical Composition	Estimated Usage
Nutrients	B88	Phosphoric Acid (2.0%) Soluble Potash (1.0%) Calcium Carbonate (2.0%)	0.5 gallons per day
	P1	Hydrochloric Acid	
Cleaning	F-182A Liquid Chlorinated Alkaline Foam Cleaner	Sodium Hydroxide (5%) Sodium Hypochlorite (1.5%) Chlorine	1.0 gallon per day
Cleaning	F-48 Liquid Acid Cleaner and Sanitizer	Quaternary Ammonium (7%) Phosphoric Acid (30%) Ethyl Alcohol (2%)	8 oz per day
Cleaning	Super Lime-Sol	Phosphoric Acid (56%) Detergents (5%)	4 gallons per year
Cleaning	Powder Bleach	Sodium Hypochlorite	2 lbs/day

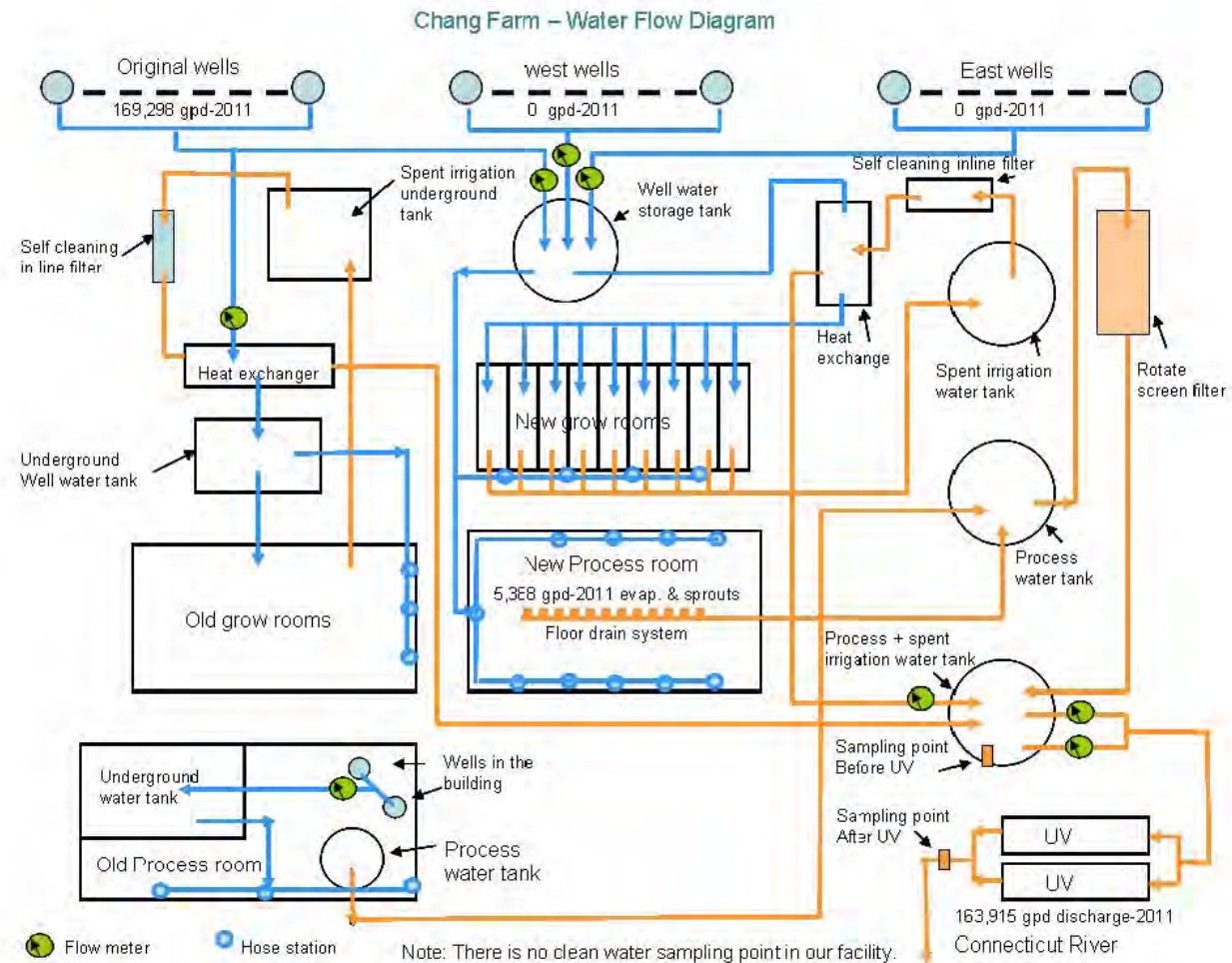
Chemicals which may not be discharged to the Connecticut River

Product Name	Company	Product Use	Estimated Usage
BALMA-SEPTIC	Rochester Midland Corporation (RMC)	Liquid Quaternary Hand Cleaner and Sanitizer	
CHERRY BOMB	Zep	Liquid Hand Cleaner	
ZEP FS Antimicrobial Foaming Hand Cleaner	Zep	Hand Cleaner	
ZEP FORMULA 4089	Zep	Lime Remover	
Calcium Hydroxide	Cutler-Magner Co.		
Clorox Bleach	Clorox Sales Company		
DPD Free Chlorine Reagent	HACH		
DPD Total Chlorine Reagent	HACH		

NPDES Permit No. MA0040207

Hardness, Total & Calcium Test Kit <ul style="list-style-type: none"> • Buffer Solution Hardness 1 pH 10.1± 0.1 • CalVer[®]2 Calcium Indicator • EDTA Tetrasodium Salt 0.800±0.004 M • ManVer[®]2 Hardness Indicator • Potassium Hydroxide Solution 8 N • TitraVer[®]Solution (Sodium EDTA) 0.0800±0.0004 M 	HACH		
Hydrogen Chloride			
RT + Liquid Scrub with Pumice	Simoniz USA Inc.	Neutral Liquid Cleaning Compound	
ZEP Peroxy-Serve 5	Zep	Microbicide	
Zep Peroxy-Serve 15	Zep	Micobicide	
PRODUCT P-1	Calco Marketing, Inc.	Bean Seed Dressing and Plant Nutrient Solution	150 gallons per year
Calcium Chloride Solid	TETRA Technologies, Inc.		8,000 lbs per year

Attachment 5: Chang Farms Process Flow Diagram



Attachment 6: Calculation of 7Q10 and Dilution Factor

Estimated 7Q10 at Outfall 001

Nearest U.S. Geological Gauging Station = 01170500 (@ Connecticut River at Montague City)

7Q10 Flow_{@Connecticut} = 1,690 cubic feet per second (cfs)

7Q10 Flow at Outfall 001 is given by the ratio of the drainage area to the known 7Q10_{@ Connecticut} such that:

$$\frac{7Q10_{@ Connecticut}}{Drainage Area_{@ Connecticut}} = \frac{7Q10_{@Outfall001}}{Drainage Area_{@Outfall001}}$$

Drainage Area_{@ Connecticut} = 7,860 square miles (mi²)

Drainage Area_{@Outfall001}¹ = 7,920 mi²

7Q10_{@Outfall001} = Q_R

Therefore:

$$\frac{1,690 \text{ cfs}}{7,860 \text{ mi}^2} = \frac{Q_R}{7,920 \text{ mi}^2}$$

And:

$$Q_R = 1,690 \text{ cfs} * \frac{7,920 \text{ mi}^2}{7,860 \text{ mi}^2} = 1,703 \text{ cfs (1,101 MGD)}$$

Dilution Factor

$$\begin{aligned} \text{Dilution Factor} &= [Q_R + (Q_P * 1.55)] / (Q_P * 1.55) \\ &= [1,703 + (0.65 * 1.55)] / (0.65 * 1.55) = 1,691 \end{aligned}$$

Where:

Q_R = Estimated 7Q10 for the receiving water at Outfall 001 = 1,703 cfs
 Q_P = Maximum design flow rate for Outfall 001 = 0.65 MGD
 1.55 = Factor to convert MGD to cfs.

¹ Estimated drainage area at Outfall 001 determined using USGS StreamStats in Massachusetts mapping tool at <http://water.usgs.gov/osw/streamstats/massachusetts.html>

MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
OFFICE OF ECOSYSTEM PROTECTION
REGION I
BOSTON, MASSACHUSETTS 02109

JOINT PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE
ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO THE WATERS OF
THE UNITED STATES UNDER SECTIONS 301 AND 402 OF THE CLEAN WATER ACT,
AS AMENDED, AND UNDER SECTIONS 27 AND 43 OF THE MASSACHUSETTS CLEAN
WATERS ACT, AS AMENDED, AND REQUEST FOR STATE CERTIFICATION UNDER
SECTION 401 OF THE CLEAN WATER ACT.

DATE OF NOTICE: September 24, 2013

PERMIT NUMBER: **MA0040207**

PUBLIC NOTICE NUMBER: MA-025-13

NAME AND MAILING ADDRESS OF APPLICANT:

Mr. Sidney Chang, Vice President
Chang Farms, Inc.
415 River Road
South Deerfield, MA 01373

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Chang Farms, Inc.
301 River Road
Whately, MA 01373

RECEIVING WATER: Connecticut River

RECEIVING WATER CLASSIFICATION: Class B

PREPARATION OF THE DRAFT PERMIT:

The U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) have cooperated in the development of a permit for the above identified facility. The effluent limits and permit conditions imposed have been drafted to assure compliance with the Clean Water Act, 33 U.S.C. sections 1251 et seq., the Massachusetts Clean Waters Act, G.L. c. 21, §§ 26-53, 314 CMR 3.00 and State Surface Water Quality Standards at 314 CMR 4.00. EPA has formally requested that the State certify this draft permit pursuant to Section 401 of the Clean Water Act and expects that the draft permit will be certified

INFORMATION ABOUT THE DRAFT PERMIT:

A fact sheet (describing the type of facility; type and quantities of wastes; a brief summary of the basis for the draft permit conditions; and significant factual, legal and policy questions considered in preparing this draft permit) and the draft permit may be obtained at no cost at http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html or by writing or calling EPA's contact person named below:

Shauna Little
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1989

The administrative record containing all documents relating to this draft permit is on file and may be inspected at the EPA Boston office mentioned above between 9:00 a.m. and 5:00 p.m., Monday through Friday, except holidays.

PUBLIC COMMENT AND REQUEST FOR PUBLIC HEARING:

All persons, including applicants, who believe any condition of this draft permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by October 23, 2013, to the U.S. EPA, 5 Post Office Square, Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider this draft permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this draft permit, the Regional Administrator will respond to all significant comments and make the responses available to the public at EPA's Boston office.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator 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.

DAVID FERRIS, DIRECTOR
MASSACHUSETTS WASTEWATER
MANAGEMENT PROGRAM
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION

KEN MORAFF, ACTING DIRECTOR
OFFICE OF ECOSYSTEM PROTECTION
ENVIRONMENTAL PROTECTION
AGENCY – REGION 1