**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"),

**Town of Durham New Hampshire**

is authorized to discharge from the Wastewater Treatment Plant located at

**100 Piscataqua Road**
**Durham, New Hampshire**

to receiving water named

**Oyster River (Hydrologic Unit Code 01060003)**

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

This permit shall become effective 45 days after date of signature.

This permit and the authorization to discharge expires at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on September 28, 1990.

This permit consists of 11 pages in Part I including effluent limitations and monitoring requirements, 6 pages in Attachment A, 9 pages in Attachment B, 48 pages in Sludge Compliance Guidance, and 35 pages in Part II including General Conditions and Definitions.

Signed this 15th day of December, 1999

Linda M. Murphy

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency (EPA)
Region I
Boston, Massachusetts

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 from outfall serial number 001 treated wastewater effluent to the Oyster River. Such discharges shall be limited and monitored by the permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken at a location that provides a representative analysis of the effluent.

| Effluent Characteristic | Discharge Limitations | | | Monitoring Requirements | |
|---|---|---|---|---|---|
| | Average Monthly | Average Weekly | Maximum Daily | Measurement Frequency | Sample Type |
| Flow; MGD | Report | --- | Report | Continuous | Recorder[1] |
| $BOD_5$; mg/L (lbs/day) | 30(630) | 45(940) | 50(1,043[3]) | 2/Week[2] | 24-Hour Composite |
| TSS; mg/L (lbs/day) | 30(630) | 45(940) | 50(1,043[3]) | 2/Week[2] | 24-Hour Composite |
| pH Range[3]; Standard Units | 6.5 to 8.0 (See I.D.1.a.) | | | 1/Day | Grab |
| Fecal Coliform[3, 4]; Colonies/100 ml | 14 | 14 | 14 | 1/Day | Grab |
| Total Residual Chlorine[5,6]; mg/L | 0.013 | — | 0.022 | 2/Day | Grab |
| Total Recoverable Copper[12,13]; mg/L | Report | --- | Report | 2/Month | Grab |
| Total Recoverable Zinc[12,13]; mg/L | Report | --- | Report | 2/Month | Grab |
| Ammonia Nitrogen as N; mg/L | Report | — | Report | 2/Week | 24-Hour Composite |
| Whole Effluent Toxicity | | | | | |
| LC50[7,8,9]; Percent | --- | --- | 100 | 4/Year | 24-Hour Composite |
| C-NOEC[7,8,10]; Percent | — | — | ≥58.8 | 4/Year | 24-Hour Composite |
| Total Recoverable Cadmium[11]; mg/L | — | — | Report | 4/Year | 24-Hour Composite |
| Total Recoverable Chromium[11]; mg/L | — | — | Report | 4/Year | 24-Hour Composite |
| Total Recoverable Nickel[11]; mg/L | — | --- | Report | 4/Year | 24-Hour Composite |
| Total Recoverable Lead[11]; mg/L | --- | --- | Report | 4/Year | 24-Hour Composite |

See pages 3 to 5 for explanation of superscripts.

**EXPLANATION OF SUPERSCRIPTS TO PART I.A.1 on page 2:**

(1) The effluent flow shall be continuously measured and recorded using a flow meter and totalizer.

(2) Influent concentrations of both $BOD_5$ and TSS shall be monitored 2 days/Month and reported as average monthly values.

(3) State certification requirement.

(4) Fecal Coliform shall be tested using test method 9222 D or 9221 C E found in Standard Methods for the Examination of Water and Wastewater, 18th or subsequent Edition(s), as approved in 40 CFR Part 136. The permittee may use 9222 D in lieu of 9221 C E after it has been demonstrated to the satisfaction of the NHDES-WD that method 9222 D generates comparable results, as per Standard Methods 9222 D.

The Average Monthly and Average Weekly values for Fecal Coliform shall be determined by calculating the geometric mean and the results reported. Not more than 10 percent of the collected samples (over a monthly period) shall exceed a Most Probable Number (MPN) of 43 per 100 ml for a 5-tube decimal dilution test. Furthermore, all Fecal Coliform data collected must be submitted with the Monthly Discharge Monitoring Reports (DMRs).

(5) Total Residual Chlorine shall be measured using any one of the following three methods listed below: in a. through c.:

a. Low level amperometric titration, using a chart recorder if possible. Standard Methods [18th or subsequent Edition(s),as approved in 40 CFR Part 136], no. 4500-Cl E.

b. DPD spectrophotometric (colorimetric), using a longer cell (e.g. 5 cm. to 10 cm.) if possible. EPA no. 330.5 or Standard Methods [18th or subsequent Edition(s), as approved in 40 CFR Part 136], no. 4500-Cl G.

c. Hach Ultra Low Range Spectrophotometric Method No.10014 Revision 1, dated 10/8/96 (version of Method 4500-Cl G).

(6) The limit at which compliance/noncompliance determinations for Total Residual Chlorine (TRC) will be based is the Minimum Level (ML). For this Permit, the ML is defined as 0.050 mg/L and this value may be reduced by permit modification as more sensitive test methods are approved by EPA and the State. Any TRC value below 0.050 mg/L shall be reported as zero on the Discharge Monitoring Report (DMR).

(7) The permittee shall conduct acute and chronic toxicity tests on effluent samples using three species, Mysid Shrimp

(Mysidopsis bahia), Inland Silverside (Menidia beryllina), and Sea Urchin (Arbacia punctulata), following the protocols in **Attachment A** (Marine Acute Toxicity Test Procedure and Protocol dated September 1996) and in **Attachment B** (Marine Chronic Toxicity Test Procedure dated September 1996. This test protocol includes the procedure to calculate an LC50 at the end of 48 hours for the Menidia beryllina acute test.) Toxicity test samples shall be collected and tests completed during the 3 month periods ending March 31th, June 30th, September30th, and December 31th, respectively, each year. Toxicity test results are to be submitted by the 15th day of the month following the end of the quarter sampled.

(8) This permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of these toxicity tests indicate the discharge causes an exceedance of any State water-quality criterion. Results from these toxicity tests are considered "New Information" and the permit may be modified as provided in 40 Code of Federal Regulations (CFR) §122.62(a)(2).

(9) LC50 is defined as the percent of effluent (wastewater) that causes mortality to 50 percent of the test organisms. The "100 percent" limit is defined as a sample which is composed of 100 percent effluent (See A.1 on Page 2 of Part 1 and Attachment A and C of Part I). The limit is considered to be a maximum daily limit.

(10) C-NOEC is defined as the chronic no observed effect concentration which is the highest concentration of effluent to which organisms are exposed in a life cycle test which causes no adverse effect on growth, survival, or reproduction. The " 100 % or greater limit " is defined as a sample which is composed of 100 percent effluent. (See A.1 on Page 2 of Part I and Attachments B and C of Part I). The limit is considered to be a maximum daily limit. If the test results do not exhibit a linear dose-response relationship, report the lowest effluent concentration where there is no observable effect.

(11) For each Whole Effluent Toxicity test the permittee shall report on the appropriate Discharge Monitoring Report, (DMR), the concentrations of the Total Recoverable Cadmium, Chromium, Lead, and Nickel found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to have at least the Minimum Quantification Level shown in Attachment A on page A-6, or as amended. Also, the permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

(12) The sampling method for metals shall be performed in accordance with the "clean techniques" approach in EPA Method 1669: Sampling Ambient Water for Trace Metals At EPA Water Quality Criteria Levels EPA 821-R-954-034, April 1995 or as amended.

(13) The analytical method for Total Recoverable Copper and Zinc shall be the Furnace AA method with a Minimum Level (ML) of detection at 0.0025 mg/L for both metals. The ML is defined as the concentration in a sample equivalent to the concentration of the lowest calibration standard analyzed in a specific analytical procedure assuming that all the method-specific sample weights, volumes and processing steps have been followed. Analytical values below 0.0025 mg/L shall be reported as zero (non-detect) on the Discharge Monitoring Report (DMR). These ML values may be reduced by permit modification as more sensitive test methods are approved by EPA and the New Hampshire Department of Environmental Services.

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS(continued)**

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be adequately treated to insure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall be adequately treated to insure that the surface waters remain free from pollutants which produce odor, color, taste or turbidity in the receiving waters which is not naturally occurring and would render it unsuitable for its designated uses.

4. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both $BOD_5$ and TSS. The percent removal shall be based on a comparison of average monthly influent versus effluent concentrations.

5. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the 2.5 MGD design flow or 2.0 MGD, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans. Before the design flow will be reached, or whenever treatment necessary to achieve permit limits cannot be assured, the permittee may be required to submit plans for facility improvements.

6. A User may not introduce into any Publicly Owned Treatment Works (POTWs) any pollutant(s) which cause Pass Through or Interference. The terms User, Pass Through and Interference are defined in 40 CFR §403.3

7. All POTWs must provide adequate notice to both EPA and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger in a primary industry category (see 40 CFR §122 Appendix A as amended) discharging process water; and

   b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

   c. For purposes of this paragraph, adequate notice shall include information on:

      (1) the quantity and quality of effluent introduced into the POTW; and

      (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

8. The permittee shall submit to EPA and NHDES-WD the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 CFR §403.6 and Chapter I, Subchapter N **who commences discharge to the POTW after the effective date of this permit**. This reporting requirement also applies to any other IU that discharges an average of 25,000 gallons per day or more of process wastewater into the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater) or contributes a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW; or is designated as such by the Control Authority as defined in 40 CFR §403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR §403.8(f)(6)).

9. In the event that the permittee receives reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from Users subject to

Categorical Pretreatment Standards under 40 CFR §403.6 and 40 CFR Chapter I, Subchapter N, the permittee shall forward all copies of these reports within ninety (90) days of their receipt to EPA and NHDES-WD.

10. The permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.

**B. SLUDGE CONDITIONS**

1. The permittee shall comply with all existing federal & state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state or federal requirements.

3. The technical standards (Part 503 regulations) apply to facilities which perform one or more of the following use or disposal practices.

   a. Land application - the use of sewage sludge to condition or fertilize the soil.
   b. Surface disposal - the placement of sewage sludge in a sludge only landfill.
   c. Placement of sludge in a municipal solid waste landfill.

4. These conditions do not apply to facilities which transport sewage sludge to another facility for use or disposal. Also, these conditions do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (lagoons-reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall use and comply with the attached Sludge Compliance Guidance document to determine appropriate conditions. Appropriate conditions contain the following elements.

   General requirements
   Pollutant limitations
   Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   Management practices
   Record keeping
   Monitoring
   Reporting

   Depending upon the quality of material produced by a facility all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year.

| | |
|---|---|
| less than 290 | 1/year |
| 290 to less than 1,500 | 1/quarter |
| 1,500 to less than 15,000 | 6/year |
| 15,000 plus | 1/month |

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.

8. The permittee shall submit an annual report containing the information specified in the Sludge Compliance Guidance. Reports are due annually by February 19th. Reports shall be submitted to the addresses (EPA and NHDES-WD) contained in the reporting section of the permit.

**C. MONITORING AND REPORTING**

Monitoring results shall be summarized for each calendar month and reported on separate Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period.

Signed and Dated original DMRs and <u>all</u> other reports required herein, shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114-8127

Duplicate signed copies of all reports required herein shall be submitted to the State at:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
6 Hazen Drive, P.O. Box 95
Concord, New Hampshire 03302-0095

**D. STATE PERMIT CONDITIONS**

1. The permittee shall comply with the following conditions which are included as State Certification requirements.

   a. The pH range of 6.5-8.0 Standard Units (S.U.) must be achieved in the final effluent unless the permittee can

demonstrate to NHDES-WD: 1) that the range should be widened due to naturally occurring conditions in the receiving water or 2) that the naturally occurring receiving water pH is not significantly altered by the permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. In no case, shall the above procedure result in pH limits outside of the range of 6.0 to 9.0 S.U., which is the federal effluent limitation guideline regulation for pH for secondary treatment and is found in 40 CFR §133.102(c).

b. Pursuant to State Law NH RSA 485-A:13 and the New Hampshire Code of Administrative Rules, Env-Ws405.04(b), submission shall be made to the NHDES-WD, of a Discharge Permit Request form by a municipality proposing to accept into its POTW (including sewers and interceptors):

   (1) any increase in industrial wastewater flow, pollutant characteristics or pollutant concentration; or

   (2) any increase in sanitary wastewater flow of 5,000 gallons per day, or more.

c. The permittee shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:12).

d. Any modifications of the Permittee's Sewer Use Ordinance, including local limitations on pollutant concentrations, shall be submitted to the NHDES-WD for approval prior to adoption by the permittee.

e. Within 90 days of the effective date of this permit, the permittee shall submit to NHDES-WD a copy of its current sewer use ordinance and a copy of any other document granting legal authority to issue permits to industries discharging industrial waste to the municipal wastewater treatment plant.

f. Within 120 days of the effective date of this permit, the permittee shall submit to NHDES-WD a current list of all industries discharging industrial waste to the municipal wastewater treatment plant. At a minimum, the list shall indicate the name and address of each industry, along with the following information: production quantity, products manufactured, industrial processes used, chemicals used in processes, existing level of pretreatment, and list of existing discharge permits.

g. Within 270 days of the effective date of this permit, the permittee shall submit to NHDES-WD a copy of discharge permit(s) issued to each industry discharging industrial waste to the municipal wastewater treatment plant. At a minimum, each permit shall contain the following: effective dates; flow and applicable pollutant limits: self-monitoring, reporting, compliance monitoring and inspection provisions; and enforcement criteria. If industrial permitting authority does not exist as of the effective date of this permit, the permittee is requested to submit to the NHDES-WD a proposed plan and implementation schedule for adopting such authority and implementing an industrial permitting system.

2. This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13.

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 the Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation.

3. If chlorine is used for disinfection, a recorder which shall continuously record the chlorine residual prior to dechlorination shall also be provided. The minimum, maximum and average daily residual chlorine values, measured prior to dechlorination, shall be submitted with monthly Discharge Monitoring Reports. Charts from the recorder, showing the continuous chlorine residual shall be maintained by the permittee for a period no less than (5) years.

4. The permittee shall provide immediate notification to the New Hampshire Department of Environmental Services, Watershed Management Bureau in the event of a discharge of raw sewage or bypass of disinfection system.

**E. SPECIAL CONDITIONS**

Whole Effluent Toxicity Test Frequency Adjustment

The permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per year) of required toxicity testing, after completion of a minimum of the most recent four (4) successive toxicity tests of effluent, all of which must be valid tests and demonstrate compliance with the permit limits for whole effluent toxicity. Until written notice is received by certified mail from the EPA indicating that the Whole Effluent Testing requirement has been changed, the permittee is

required to continue testing at the frequency specified in the respective permit.

pH Limit Adjustment

The permittee may submit a written request to the EPA requesting a change in the permitted pH limit range to be not less restrictive than 6.0 to 9.0 Standard Units found in the applicable national Effluent Limitation Guideline (Secondary Treatment Regulations in 40 CFR Part 133) for this facility. The permittee's written request must include the State's letter containing an original signature (no copies). The State's approval letter shall state that the permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify for each outfall the associated numeric pH limit range. Until written notice is received by certified mail from the EPA indicating the pH limit range has been changed, the permittee is required to meet the permitted pH limit range in the respective permit.

**F. REOPENER CLAUSE**

The effluent limitations in this permit maybe modified to reflect the information and data developed during an investigation of the initial dilution for the existing or alternate outfall location(s) including the establishment of a mixing zone. Results from the Outfall Improvements/Relocation study would be considered "new information" and the permit can be modified in accordance with 40 CFR 122.62(a)(2).

This permit may be modified to incorporate seasonal Ammonia limitations if the Ammonia monitoring results indicate the discharge causes or contributes to an exceedance of the State's narrative criteria for toxicity or numeric water quality criteria for ammonia in saltwater. Results of the Ammonia monitoring would be considered "new information" and the permit can be modified in accordance with 40 CFR 122.62(a)(2).

**MARINE 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:

- **Mysid Shrimp (Mysidopsis bahia) definitive 48 hour test.**
- **Inland Silverside (Menidia beryllina) definitive 48 hour test.**

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

## II. METHODS

Methods to follow are those recommended by EPA in:

Weber, C.I. et al. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. August 1993, EPA/600/4-90/027F.

Any exceptions are stated herein.

## 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 the chemical and physical analyses. The remaining sample shall be 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 oxidants (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. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

## IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected at a point away from the discharge which is free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall 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 conductivity, salinity, total suspended solids, and pH 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 alternative dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

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 AND TEST ACCEPTABILITY CRITERIA

EPA New England requires tests be performed using four replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from fewer replicates. The following tables summarize the accepted Mysid and Menidia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE MYSID, MYSIDOPSIS BAHIA 48 HOUR TEST[1]**

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| | | |
|---|---|---|
| 1. | Test type | Static, non-renewal |
| 2. | Salinity | 25ppt ± 10 percent for all dilutions by adding dry ocean salts |
| 3. | Temperature (°C) | |
| | 20°C ± 1°C or 25°C ± 1°C | |
| 4. | Light quality | |
| | Ambient laboratory illumination | |
| 5. | Photoperiod | |
| | 16 hour light, 8 hour dark | |
| 6. | Test chamber size | 250 ml |
| 7. | Test solution volume | 200 ml |
| 8. | Age of test organisms | 1-5 days |
| 9. | No. Mysids per test chamber | 10 |
| 10. | No. of replicate test chambers per treatment | 4 |
| 11. | Total no. Mysids per test concentration | 40 |
| 12. | Feeding regime | Light feeding using concentrated Artemia nauplii while holding prior to initiating the test |
| 13. | Aeration[2] | None |

| | | |
|---|---|---|
| 14. | Dilution water | Natural seawater, or deionized water mixed with artificial sea salts |
| 15. | Dilution factor | $\geq$ 0.5 |
| 16. | Number of dilutions[3] | 5 plus a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series. |
| 17. | Effect measured | Mortality - no movement of body appendages on gentle prodding |
| 18. | Test acceptability | 90% or greater survival of test organisms in control solution |
| 19. | Sampling requirements | For on-site tests, samples are used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection. |
| 20. | Sample volume required | Minimum 1 liter for effluents and 2 liters for receiving waters |

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Footnotes:

1. Adapted from EPA/600/4-90/027F.

2. If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND RECOMMENDED TOXICITY TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA 48 HOUR TEST[1]**

| | | |
|---|---|---|
| 1. | Test Type | Static, non-renewal |
| 2. | Salinity | 25 ppt ± 2 ppt by adding dry ocean salts |
| 3. | Temperature | 20°C ± 1°C or 25°C ± 1°C |
| 4. | Light Quality | Ambient laboratory illumination |
| 5. | Photoperiod | 16 hr light, 8 hr dark |
| 6. | Size of test vessel | 250 mL (minimum) |
| 7. | Volume of test solution | 200 mL/replicate (minimum) |
| 8. | Age of fish | 9-14 days; 24 hr age range |
| 9. | No. fish per chamber | 10 (not to exceed loading limits) |
| 10. | No. of replicate test vessels per treatment | 4 |
| 11. | total no. organisms per concentration | 40 |
| 12. | Feeding regime | Light feeding using concentrated Artemia nauplii while holding prior to initiating the test |
| 13. | Aeration[2] | None |
| 14. | Dilution water | Natural seawater, or deionized water mixed with artificial sea salts. |
| 15. | Dilution factor | ≥ 0.5 |

| | |
|---|---|
| 16. Number of dilutions[3] | 5 plus a control. An additional dilution at the permitted concentration (% effluent) is required if it is not included in the dilution series. |
| 17. Effect measured | Mortality-no movement on gentle prodding. |
| 18. Test acceptability | 90% or greater survival of test organisms in control solution. |
| 19. Sampling requirements | For on-site tests, samples must be used within 24 hours of the time they are removed from the sampling device. Off-site test samples must be used within 36 hours of collection. |
| 20. Sample volume required | Minimum 1 liter for effluents and 2 liters for receiving waters. |

Footnotes:

1. Adapted from EPA/600/4-90/027F.

2. If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks recommended.

3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

## VI. CHEMICAL ANALYSIS

At the beginning of the static acute test, pH, salinity, and temperature must be measured at the beginning and end of each 24 hour period in each dilution and in the controls. The following chemical analyses shall be performed for each sampling event.

| Parameter | Effluent | Diluent | Minimum Quantification Level (mg/L) |
|---|---|---|---|
| pH | x | x | --- |
| Salinity | x | x | PPT(o/oo) |
| Total Residual Oxidants[*1] | x | x | 0.05 |
| Total Solids and Suspended Solids | x | x | --- |
| Ammonia | x | x | 0.1 |
| Total Organic Carbon | x | x | 0.5 |
| **Total Metals** | | | |
| Cd | x | | 0.001 |
| Cr | x | | 0.005 |
| Pb | x | | 0.005 |
| Cu | x | | 0.0025 |
| Zn | x | | 0.0025 |
| Ni | x | | 0.004 |
| Al | x | | 0.02 |

Superscript:

[*1] Total Residual Oxidants

Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

-Method 4500-Cl E Low Level Amperometric Titration (the preferred method);
-Method 4500-CL G DPD Photometric Method.

or use USEPA Manual of Methods Analysis of Water or Wastes, Method 330.5.

## VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration

An estimate of the concentration of effluent or toxicant that is lethal to 50% of the test organisms during the time prescribed by the test method.

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart in Figure 6 on page 77 of EPA 600/4-90/027F for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See flow chart in Figure 13 on page 94 of EPA 600/4-90/027F.

## VIII. TOXICITY TEST REPORTING

The following must be reported:

- 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; and
- 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 toxicity test data must be included.
- Raw data and bench sheets.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Provide a description of dechlorination procedures (as applicable).

- Any other observations or test conditions affecting test outcome.

- Statistical tests used to calculate endpoints.

# MARINE CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL

## I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable silverside chronic (and modified acute) and sea urchin chronic toxicity tests in accordance with the appropriate test protocols described below:

- **Inland Silverside (Menidia beryllina) Larval Growth and Survival Test.**
- **Sea Urchin (Arbacia punctulata) 1-Hour Fertilization Test.**

Chronic and acute toxicity data shall be reported as outlined in Section VIII. The chronic Menidia test can be used to calculate an LC50 at the end of 48 hours of exposure when both an acute (LC50) and a chronic (C-NOEC) test is specified in the permit.

## II. METHODS

Methods to follow are those recommended by EPA in:

Klemm, D.J. et al. Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters To Marine and Estuarine Organisms, Second Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency July 1994, EPA/600/4-91/003.

Any exceptions are stated herein.

## III. SAMPLE COLLECTION

For each sampling event involving the Menidia beryllina, three discharge samples shall be collected. Fresh samples are necessary for Days 1, 3, and 5 (see Section V. for holding times). A single sample is necessary for the Arbacia punctulata test. The sample shall be analyzed chemically (see Section VI). The initial sample (Day 1) is used to start the tests, and for test solution renewal on Day 2. The second sample is collected for use at the start of Day 3, and for renewal on Day 4. The third sample is used on Days 5, 6, and 7. The initial (Day 1) sample will be analyzed chemically (see Section VI). Day 3 and 5 renewal samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause

lethality to 50 percent or more test organisms in any of the dilutions for either species, then a chemical analysis shall be performed on the appropriate sample(s) as well.

Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for the chemical and physical analyses. The remaining sample shall be 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 oxidants (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 mg/L chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

**IV. DILUTION WATER**

Grab samples of receiving water used for chronic toxicity testing shall be collected from one or several distances away from the discharge. It may be necessary to test receiving water at several distances in a separate chronic test to determine the extent of the zone of toxicity. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall 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 conductivity, salinity, total suspended solids, organic carbon, and pH 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 alternative dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency - Region I
One Congress Street Suite 1100 (CAA)
Boston, Massachusetts 02114-2023

It may prove beneficial to the permittee 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 AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that tests be performed using four replicates of each control and effluent concentration because the on-parametric statistical tests cannot be used with data from fewer replicates. Also, if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

The following tables summarize the accepted Menidia and Arbacia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE SEA URCHIN, ARBACIA PUNCTULATA, FERTILIZATION TEST[1]**

| | |
|---|---|
| 1. Test type | Static, non-renewal |
| 2. Salinity | 30 o/oo ± 2 o/oo by adding dry ocean salts |
| 3. Temperature | 20 ± 1°C |
| 4. Light quality | Ambient laboratory light during test preparation |
| 5. Light intensity | 10-20 uE/$m^2$/s, or 50-100 ft-c (Ambient Laboratory Levels) |
| 6. Test vessel size | Disposal (glass) liquid scintillation vials (20 ml capacity), presoaked in control water |
| 7. Test solution volume | 5 ml |
| 8. Number of sea urchins | Pooled sperm from four males and pooled eggs from four females are used per test |
| 9. Number of egg and sperm cells per chamber | About 2,000 eggs and 5,000,000 sperm cells per vial |
| 10. Number of replicate chambers per treatment | 4 |
| 11. Dilution water | Uncontaminated source of natural seawater or deionized water mixed with artificial sea salts |
| 12. Dilution factor | Approximately 0.5 |
| 13. Test duration | 1 hour and 20 minutes |
| 14. Effects measured | Fertilization of sea urchin eggs |
| 15. Number of treatments per test[2] | 5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required. |

| | | |
|---|---|---|
| 16. | Acceptability of test | Minimum of 70% fertilization in controls. Effluent concentrations exhibiting greater than 70% fertilization, flagged as statistically significantly different from the controls, will not be considered statistically different from the controls for NOEC reporting. |
| 17. | Sampling requirements | For on-site tests, samples are to be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection. |
| 18. | Sample volume required | Minimum 1 liter |

Footnotes:

1. Adapted from EPA/600/4-91/003, July 1994.

2. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA, GROWTH AND SURVIVAL TEST[1]**

| | | |
|---|---|---|
| 1. | Test type | Static, renewal |
| 2. | Salinity | 5 o/oo to 32 o/oo ± 2 o/oo by adding artificial sea salts |
| 3. | Temperature | 25 ± 1°C |
| 4. | Light quality | Ambient laboratory light |
| 5. | Light intensity | 10-20 uE/$m^2$/s, or 50-100 ft-C (Ambient Laboratory Levels) |
| 6. | Photoperiod | 16 hr light, 8 hr darkness |
| 7. | Test vessel size | 600 - 1000 mL beakers or equivalent (glass test chambers should be used) |
| 8. | Test solution volume | 500-750 mL/replicate loading and DO restrictions must be met. |
| 9. | Renewal of test solutions | Daily using most recently collected sample. |
| 10. | Age of test organisms | Seven to eleven days post hatch; 24 hr range in age. |
| 11. | Larvae/test chamber | 15 (minimum of 10) |
| 12. | Number of replicate chambers | 4 per treatment |
| 13. | Source of food | Newly hatched and rinsed Artemia nauplii less than 24 hr old |
| 14. | Feeding regime | Feed once a day 0.10 g wet wt Artemia nauplii per replicate on days 0-2; feed 0.15 g wet wt Artemia nauplii per replicate on days 3-6 |
| 15. | Cleaning | Siphon daily, immediately before test solution renewal and feeding |
| 16. | Aeration[2] | None |

| | | |
|---|---|---|
| 17. | Dilution water | Uncontaminated source of natural seawater; or deionized water mixed with artificial sea salts. |
| 18. | Effluent concentrations[3] | 5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required. |
| 19. | Dilution factor | ≥ 0.5 |
| 20. | Test duration | 7 days |
| 21. | Effects measured | Survival and growth (weight) |
| 22. | Acceptability of test | The average survival of control larvae is a minimum of 80%, and the average dry wt of unpreserved control larvae is a minimum of 0.5 mg, or the average dry wt of preserved control larvae is a minimum of 0.43 mg if preserved not more than 7 days in 4% formalin or 70% ethanol. |
| 23. | Sampling requirements | For on-site tests, samples are collected daily and used within 24 hours of the time they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection. |
| 24. | Sample Volume Required | Minimum of 6 liters/day. |

Footnotes:

[1] Adapted from EPA/600/4-91/003, July 1994.

[2] If dissolved oxygen (D.O.) falls below 4.0 mg/L, aerate all chambers at a rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

[3] When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

## VI. CHEMICAL ANALYSIS

As part of each daily renewal of the Menidia test, pH, dissolved oxygen, salinity, and temperature must be measured at the beginning and end of each 24-hour period in each dilution and in the controls. It must also be done at the start of the Arbacia test. The following chemical analyses shall be performed for each sampling event.

| Parameter | Effluent | Diluent | Minimum Quantification Level (mg/L) |
|---|---|---|---|
| pH | x | x | --- |
| Salinity | x | x | PPT(o/oo) |
| Total Residual Oxidants[*1] | x | x | 0.05 |
| Total Solids and Suspended Solids | x | x | --- |
| Ammonia | x | x | 0.1 |
| Total Organic Carbon | x | x | 0.5 |
| Total Metals | | | |
| Cd | x | | 0.001 |
| Cr | x | | 0.005 |
| Pb | x | | 0.005 |
| Cu | x | | 0.0025 |
| Zn | x | | 0.0025 |
| Ni | x | | 0.004 |
| Al | x | | 0.02 |

Superscripts:

[*1] Total Residual Oxidants
Either of the following methods from the 18th Edition of the APHA (1992) Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

-Method 4500-CL E. Low-level Amperometric Titration (the preferred method);
-Method 4500-CL G. DPD Colorimetric Method, or use U.S. EPA Manual of Methods Analysis of Water or Wastes Method 330.5.

## VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:
- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart on page 56 of EPA/600/4-91/003 for appropriate point

estimation method to use on a given data set.

Chronic No Observed Effect Concentration (C-NOEC)

Methods of Estimation:

- Dunnett's Procedure
- Bonferroni's T-Test
- Steel's Many-One Rank Test
- Wilcoxin Rank Sum Test

Reference flow charts on pages 191, 192, and 321 of EPA/600/4-91/003 for the appropriate method to use on a given data set.

In the case of two tested concentrations causing adverse effects but an intermediate concentration not causing a statistically significant effect, report the C-NOEC as the lowest concentration where there is no observable effect. The definition of NOEC in the EPA Technical Support Document only applies to linear dose-response data.

## VIII. TOXICITY TEST REPORTING

A report of 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; and
- 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.

# EPA REGION I

## NPDES PERMIT
## SLUDGE COMPLIANCE GUIDANCE

**04 NOVEMBER 1999**

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# 1. LAND APPLICATION

This section applies to sewage sludge from the permittee's facility which is applied to the land for the purpose of enriching the soil. The permittee should answer the following questions. The answers to these questions need to be evaluated to determine which permitting scenario for sewage sludge land application applies. After the permitting scenario is determined, the permittee must comply with the directives contained in the chosen scenario.

## 1.1 Question Algorithm

The permittee should review and answer the following questions. The information gathered from answering these questions will aid the permittee to determine the appropriate land application scenario which applies to the sludge generated at the permittee's waste water treatment facility. The scenario selected will detail which specific Use or Disposal of Sewage Sludge, Part 503, regulations must be complied with for the land application method used by the permittee.

1. What type of land is the sewage sludge being applied to?

   If the sewage sludge/material is to be sold or given away, or applied to a lawn or home garden, the sewage sludge MUST meet Class A pathogen reduction requirements.

2. Is all the sludge generated at the facility used in the same manner?

   If all the sludge is not used the same way, the permittee needs to determine what amounts are used in what manner. Different scenarios may apply to the different portions.

3. Is the sewage sludge in bulk or is it a bagged material?

   Scenario No.1 and No.6 can be applied to bagged materials. All other scenarios apply to bulk sewage sludge only. Bulk material is an amount of sewage sludge greater than one metric ton (2200 lbs).

4. What is the metals content in the sewage sludge for the following metals: arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc?

   If any of the concentrations in Table 1 of 40 CFR §503.13 (b) (1) are exceeded on a dry weight basis, the sewage sludge cannot be land applied. Table 1 is summarized below:

**§503.13 Table 1**

**Maximum Pollutant Concentrations**

| | |
|---|---|
| Arsenic | 75 mg/kg |
| Cadmium | 85 mg/kg |
| Copper | 4300 mg/kg |
| Lead | 840 mg/kg |
| Mercury | 57 mg/kg |
| Molybdenum | 75 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 7500 mg/kg |

5. Does the sludge qualify for "exceptional quality" criteria in accordance with Table 3, 40 CFR §503.13(b)(3)on a dry weight basis? Table 3 is summarized:

**§503.13 Table 3**

**Exceptional Quality Pollutant Concentrations**

| | |
|---|---|
| Arsenic | 41 mg/kg |
| Cadmium | 39 mg/kg |
| Copper | 1500 mg/kg |
| Lead | 300 mg/kg |
| Mercury | 17 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 2800 mg/kg |

In addition, Class A pathogen reduction (see Section 4), and achievement of one of the vector attraction reduction alternatives 1 through 8 (see Section 5) must be attained.

**NOTHING ELSE QUALIFIES AS EXCEPTIONAL QUALITY**

6. What is the level of pathogen reduction achieved, Class A or Class B?

   Refer to Section 4, Pathogen Reduction, to select the appropriate method that is used to reduce the pathogens in the sewage sludge produced at the facility.

7. What is the method for vector attraction reduction?

   Refer to Section 5, Vector Attraction Reduction, to select the appropriate method that is used to reduce the pathogens in the sewage sludge produced at the facility.

8. What is the amount of sewage sludge used in dry metric tons/365 day period?

   This determines the frequency of monitoring (see Section 6) for the pollutants, pathogens and vectors. Use the table below to make the determination:

**Sampling Frequency Table**

| **SEWAGE SLUDGE PRODUCED** (metric tons per 365 day period) | **SAMPLING FREQUENCY** |
|---|---|
| 0<Sludge (tons) <290 | Once Per year |
| 290≤Sludge (tons) <1500 | Once Per Quarter (four times per year) |
| 1500≤Sludge (tons) <15000 | Once Per 60 days (six times per year) |
| Sludge (tons) ≤15000 | Once Per Month (12 times per year) |

## 1.2 Scenario Determination

After the information is gathered and evaluated from the questions in the preceding section, the permittee can select the appropriate land application scenario from the table on page 1.4.

**Land Application Scenario Selection Table**

| SCENARIO | LAND TYPE | BULK/ BAGGED | POLLUTANT LIMITS[2] | PATHOGENS[3] | VECTORS[3] |
|---|---|---|---|---|---|
| No .1 | ANY TYPE | BOTH (EQ) | TABLE 3 | CLASS A | 1-8 ONLY |
| No .2 | SEE BELOW[1] | BULK | TABLE 3 | CLASS A | 9 OR 10 |
| No .3 | SEE BELOW[1] | BULK | TABLE 3 | CLASS B | 1-10 |
| No .4 | SEE BELOW[1] | BULK | TABLE 2 | CLASS A | 1-10 |
| No .5 | SEE BELOW[1] | BULK | TABLE 2 | CLASS B | 1-10 |
| No .6 | ANY TYPE | BAGGED | TABLE 4 | CLASS A | 1-8 ONLY |

1. Land types: Agricultural land, forest, reclamation site or public contact site
2. Refer to 40 CFR §503.13 Table 2, Table 3 and Table 4
3. The Pathogen Reduction Section (Section 4)and Vector Attraction Reduction Section (Section 5) are located after the Scenario section.

## 1.3. Scenarios

This section contains the sewage sludge land application scenarios. One of these scenarios has been selected by the permittee, based on reading and answering the questions in Section 1.2, to regulate their treatment facility's sewage sludge land application.

### 1.3.1. Scenario No. 1

This applies to bulk or bagged sewage sludge and materials derived from sewage sludge meeting the pollutant concentrations at §503.13(b)(3); one of the Class A pathogen reduction alternatives at §503.32(a); one of the vector attraction reduction requirements at §503.33(b)(1) through (b)(8). Materials meeting these characteristics are considered "Exceptional Quality" materials and are exempt from the general requirements at §503.12 and the management practices at §503.14. Sludges of this quality may be applied to any type of land.

**SLUDGE CONDITIONS**

1. Pollutant Limitations

a. The maximum concentrations of metals in the sewage sludge that is applied to the land shell not exceed the following (dry weight basis:

| | |
|---|---|
| Arsenic | 75 mg/kg |
| Cadmium | 85 mg/kg |
| Copper | 4300 mg/kg |
| Lead | 840 mg/kg |
| Mercury | 57 mg/kg |
| Molybdenum | 75 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 7500 mg/kg |

b. The sewage sludge shall not be applied to the land if any of the pollutant concentrations in Paragraph 1a. are exceeded.

c. The monthly average concentration of metals in the sewage sludge shall not exceed the following (dry weight basis):

| | |
|---|---|
| Arsenic | 41 mg/kg |
| Cadmium | 39 mg/kg |
| Copper | 1500 mg/kg |
| Lead | 300 mg/kg |
| Mercury | 17 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 2800 mg/kg |

2. The permittee shall meet Class A pathogen requirements utilizing one of the methods specified in 40 CFR §503.32.

3. The permittee shall meet one of the vector attraction reduction requirements specified in 40CFR §503.33. The permittee may only utilize alternatives 1 through 8. If the permittee meets one of the vector attraction reduction alternatives 1 through 5, the Class A pathogen requirements must be met either prior to or at the same time as the vector attraction reduction requirement.

4. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 1a, the pathogen density and the vector attraction reduction requirements at the frequency specified in sludge condition 6 of the permit.

5. The permittee shall develop and retain the following information for five years:

   a. The concentration of each pollutant listed in Paragraph 1a..

   b. The following certification statement:

   "I certify, under penalty of law, that the information that will be used to determine compliance with the Class A pathogen requirements in §503.32(a) and the vector attraction reduction requirements in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through (b)(8)] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

   c. A description of how the Class A pathogen requirements are met.

   d. A description of how the vector attraction reduction requirements are met.

6. The permittee shall report the information in Paragraphs 5a, b, c, and d annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of this permit.

7. All sewage sludge sampling and analysis procedures shall be in accordance with the procedures detailed in 40 CFR §503.8.

**1.3.2. Scenario No.2**

This scenario applies to bulk sewage sludge or materials derived from bulk sewage sludge meeting the following criteria: the pollutant concentrations in §503.13(b)(3); Class A pathogen requirements in §503.32(a); and vector attraction §503.33(b)(9) or (b)(10). Sludge of this quality

may be applied to agricultural land, forest land, public contact site or reclamation site. This scenario has specific requirements for the preparer and the applier.

**SLUDGE CONDITIONS**

1. The permittee and the applier of the bulk sewage sludge shall comply with the following general requirements:

    a. Bulk sewage sludge shall not be applied the land except in accordance with 40 CFR Part 50J, Subpart B.

    b. The permittee shall provide the person who applies the bulk sewage sludge written notification of the concentration of total nitrogen (as N on a dry weight basis) in the bulk sewage sludge.

    c. The person who applies the bulk sewage sludge shall obtain notice and necessary information from the permittee to comply with the requirements of 40 CFR Part 503, Subpart B.

    d. When the permittee provides the bulk sewage sludge to a person who applies the bulk sewage sludge, the permittee shall provide the person who applies the bulk sewage sludge notice and necessary information to comply with 40 CFR part 503, Subpart B.

    e. When the permittee provides the bulk sewage sludge to a person who prepares the bulk sewage sludge the permittee shall provide the preparer notice and necessary information to comply with 40 CFR Part 503, Subpart B.

    f. The person who applies the bulk sewage sludge shall provide the owner or lease holder of the land on which the bulk sewage sludge is applied notice and necessary information to comply with 40 CFR Part 503, Subpart B.

    g. When bulk sewage sludge is applied in another state, the person who prepares the sewage sludge shall provide notice to the permitting authority for the state in which the sewage sludge will be applied. Notice shall be given prior to the initial application and shall contain the following information:

        i. The location of each site by either street address or latitude and longitude.

        ii. The approximate period of time the bulk sewage sludge will be applied to each site.

iii. The name, address, telephone number and National Pollutant Discharge Elimination System permit number (if applicable) for the person who prepares the bulk sewage sludge.

iv. The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if applicable) for the person who applies the bulk sewage sludge.

2. Pollutant Limitations

a. The maximum concentration of metals in the sewage sludge that is applied to the land shall not exceed the following (dry weight basis):

| | |
|---|---|
| Arsenic | 75 mg/kg |
| Cadmium | 85 mg/kg |
| Copper | 4300 mg/kg |
| Lead | 840 mg/kg |
| Mercury | 57 mg/kg |
| Molybdenum | 75 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 7500 mg/kg |

b. The sewage sludge shall not be applied to the land if any of the pollutant concentrations in Paragraphs 2a are exceeded.

c. The monthly average concentration of metals in the sewage sludge shall not exceed the following (dry wight basis):

| | |
|---|---|
| Arsenic | 41 mg/kg |
| Cadmium | 39 mg/kg |
| Copper | 1500 mg/kg |
| Lead | 300 mg/kg |
| Mercury | 17 mg/kg |

| | |
|---|---|
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 2800 mg/kg |

3. The permittee shall meet Class A pathogen requirements utilizing one of the methods specified in 40 CFR §503.32

4. The person who applies the bulk sewage sludge shall meet either vector attraction reduction requirement 9 or 10 as specified in 40 CFR §503.33.

5. The bulk sewage sludge shall be injected below the surface of the land, or incorporated into the soil within 8 hours after discharge from the pathogen treatment process.

6. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2a and the pathogen density requirements at the frequency specified in sludge condition 6 of the permit.

7. The person who applies the bulk sewage sludge to the land shall comply with the following management practices:

    a. The bulk sewage sludge shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated habitat.

    b. The bulk sewage sludge shall not be applied to agricultural land, forest land, a public contact site or a land reclamation site that is frozen, snow-covered or flooded so that the bulk sewage sludge enters a wetland or other water of the United States as defined in 40 CFR §122.2, except as provided in a permit issued pursuant to Section 402 or 404 of the Clean Water Act.

    c. Bulk sewage sludge shall not be applied to agricultural land, forest land, and public contact site, or land reclamation site that is less than 10 meters (33 feet) from waters of the United States, as defined in 40 CFR §122.2.

    d. The whole sludge application rate shall be applied at an agronomic rate designed to (i) provide the amount of nitrogen needed by the crop or vegetation grown on the land; and (ii) minimize the amount of nitrogen that passes below the root zone for the crop or vegetation grown of the land into the groundwater.

8. The permittee shall develop and retain the following information for five years:

   a. The pollutant concentration for each pollutant listed in Paragraph 2a. of this section.

   b. The following certification statement:

   "I certify, under penalty of law, that the information that will ve used to determine compliance with the Class A pathogen requirements in §503.32 (a) was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility for fine and imprisonment."

   c. A description of how the pathogen requirements are met.

9. The person who applies the bulk sewage sludge shall develop and retain the following information for five years:

   a. The following certification requirement:

   "I certify, under penalty of law, that the information that will be used to determine compliance with the management practices in §503.14 and the vector attraction reduction requirement in [insert either §503.33 (b)(9) or (b)(10)] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including fine and imprisonment."

   b. A description of how the management practices in §503.14 are met for each site on which the bulk sewage sludge is applied.

   c. A description of how the vector attraction reduction requirements are met for each site on which bulk sewage sludge is applied, including a description of how the requirement in Paragraph 5 is met.

10. The permittee shall report the information in paragraphs 8a, b and c annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of this permit.

11. All sludge sampling and analysis shall be in accordance with the procedures detailed in 40 CFR §503.8.

12. The permittee shall supply the following information/requirements to the person who applies the bulk sewage sludge:

    a. Information in Paragraph 1b.
    b. Requirements in Paragraphs 1f and 5.
    c. Management Practices in Paragraphs 7a through d.
    d. Record keeping requirements in Paragraphs 9a through c.

13. If the permittee intends to apply sludge to land application sites not identified at the time of permit issuance, the permittee shall submit a land application plan 180 days prior to initial application at the new site. The plan shall:

    a. Describe the geographic area covered by the plan;
    b. Identify site selection criteria;
    c. Describe how sites will be managed; and
    d. Provide for advance public notice as required by state and local laws, and notice to landowners and occupants adjacent to or abutting the proposed land application site.

**1.3.3. Scenario No. 3**

This scenario applies to bulk sewage sludge meeting the following criteria: pollutant concentrations at §503.13(b); Class B pathogens at §503.32(b); and one of the vector attraction reduction requirements found at §503.33(b). Bulk sewage sludge of this quality may be applied to agricultural land, forest land, public contact site or a reclamation site. There are specific requirements for the preparer and applier.

SLUDGE CONDITIONS

1. The permittee and the applier of the bulk sewage sludge shall comply with the following general requirements:

    a. Bulk sewage sludge shall not the applied to the land except in accordance with 40 CFR Part 503 Subpart B.

    b. The permittee shall provide the person who applies the bulk sewage sludge written notification of the concentration of total nitrogen (as N on a dry weight basis) in the bulk sewage sludge.

    c. The person who applies the bulk sewage sludge shall obtain notice and necessary information from the permittee to comply with the requirements of 40 CFR Part 503 Subpart B.

d. When the permittee provides the bulk sewage sludge to a person who applies the bulk sewage sludge, the permittee shall provide the person who applies the bulk sewage notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

e. When the permittee provides the bulk sewage sludge to a person who prepares the bulk sewage sludge, the permittee shall provide the person who prepares the bulk sewage sludge notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

f. The person who applies the bulk sewage sludge shall provide the owner or lease holder of the land on which the bulk sewage sludge is applied notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

g. When bulk sewage sludge is applied in another state, the person who prepares the sewage sludge shall provide notice to the permitting authority for the state in which the sewage sludge will be applied. Notice shall be given prior to the initial application and shall contain the following information:

i. The location of each site by either street address or latitude and longitude.

ii. The approximate period of time the bulk sewage sludge will be applied to each site.

iii. The name, address, telephone number and National Pollutant Discharge Elimination System permit number (if applicable) for the person who prepares the bulk sewage sludge.

iv. The name, address, telephone number, and national Pollutant Discharge Elimination System permit number (if applicable) for the person who applies the bulk sewage sludge.

2. Pollutant Limitations

a. The maximum concentration of metals in the sewage sludge that is applied to the land shall not exceed the following (dry weight basis):

| | |
|---|---|
| Arsenic | 75 mg/kg |
| Cadmium | 85 mg/kg |
| Copper | 4300 mg/kg |

| | |
|---|---|
| Lead | 840 mg/kg |
| Mercury | 57 mg/kg |
| Molybdenum | 75 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 7500 mg/kg |

b. The sewage sludge shall not be applied to the land if any of the pollutant concentrations in Paragraph 2a are exceeded

c. The monthly average concentration of metals in the sewage sludge shall not exceed the following (dry weight basis):

| | |
|---|---|
| Arsenic | 41 mg/kg |
| Cadmium | 39 mg/kg |
| Copper | 1500 mg/kg |
| Lead | 300 mg/kg |
| Mercury | 17 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 2800 mg/kg |

3. The permittee shall meet Class B pathogen requirements utilizing one of the methods specified in 40CFR §503.32

4. The permittee shall meet one of vector attraction reduction requirements specified in 40CFR §503.33

5. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2a, the pathogen density requirements and the vector attraction reduction requirements at the frequency specified in sludge condition 6 of the permit.

6. The person who applies the bulk sewage sludge to the land shall comply with the following management practices:

a. The bulk sewage sludge shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated habitat.

b. The bulk sewage sludge shall not be applied to agricultural land, forest land, a public contact site or a land reclamation site that is frozen, snow-covered or flooded so that the bulk sewage sludge enters a wetland or other water of the United States as defined in 40 CFR 122.2, except as provided in a permit issued pursuant to Section 402 or 404 of the Clean Water Act.

c. Bulk sewage sludge shall not be applied to agricultural land, forest land, a public contact site or a land reclamation site that is less than 10 meters (33 feet) from waters of the United States, as defined in 40 CFR §122.2.

d. The whole sludge application rate shall be applied at an agronomic rate designed to (i) provide the amount of nitrogen needed by the crop or vegetation grown on the land; and (ii) minimize the amount of nitrogen that passes below the root zone for the crop or vegetation grown of the land into the groundwater.

7. The person who applies the bulk sewage sludge shall insure that the following site restrictions are met for each site on which the bulk sewage sludge is applied:

a. Food crops with harvested parts that touch the sewage sludge/soil mixture and are not totally above the land surface shall not be harvested for 14 months after application of sewage sludge.

b. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of sewage sludge when the sewage sludge remains on the land surface for four months or longer prior to incorporation into the soil.

c. Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into soil.

d. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of sewage sludge.

e. Animals shall not be grazed on the land for 30 days after application of sewage sludge.

f. Turf grown on land where sewage sludge is applied shall not be harvested for one year after application of the sewage sludge when the harvested turf is placed on either land with high potential for public exposure or a lawn.

g. Public access to land with a high potential for public exposure shall be restricted for one year after application of sewage sludge.

h. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of sewage sludge.

8. The permittee shall develop and retain the following information for five years:

a. The concentration of each pollutant listed in Paragraph 2a of this section.

b. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the Class B pathogen requirement in §503.32(b) and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33 (b)(1) through (b)(8), if one of those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information I am aware that there are significant penalties for false certification including the possibility of fine or imprisonment."

c. A description of how the Class B pathogen requirements are met.

d. When the permittee is responsible for meeting the vector attraction reduction requirements, a description of how the vector attraction reduction requirements are met.

9. The person who applies the bulk sewage sludge shall develop and maintain the following information for five years:

a. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the management practices in §503.14, the site restrictions in §503.32(b)(5), and the vector attraction reduction requirements in [insert either §503.33(b)(9) or (b)(10), if one of those requirements is met] was prepared for each site on which sewage sludge is applied under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including

the possibility of fine and imprisonment."

b. A description of how the management practices in Paragraphs 6a through d are met for each site.

c. A description of how the site restrictions in Paragraphs 7a through h are met for each site.

d. When the applier is responsible for meeting the vector attraction reduction requirements, a description of how the vector attraction reduction requirements in either §503.33(b)(9) or (b)(10) is met.

10. The permittee shall report the information in Paragraph 8a, b, c and d annually on February 19. Reports shall be submitted to the address in the Monitoring and Reporting section of this permit.

11. All sludge sampling and analysis shall be in accordance with the procedures detailed in 40CFR §503.8

12. The permittee shall notify the person who applies the bulk sewage sludge of the following information/requirements:

a. Information in Paragraph 1b.
b. Requirement in Paragraph 1f.
c. Management practices in Paragraph 6a through d.
d. Site Restrictions in Paragraph 7a through h.
e. Record keeping requirements in Paragraphs 9a through d.

13. If the permittee intends to apply sludge to land application sites not identified at the time of permit issuance, the permittee shall submit a land application plan 180 days prior to initial application at the mew site. The plan shall:

a. Describe the geographic area covered by the plan;
b. Identify site selection criteria;
c. Describe how sites will be managed; and
d. Provide for advance public notice as required by state and local laws, and notice to landowners and occupants adjacent to or abutting the proposed land application site.

**1.3.4. Scenario No. 4**

This scenario applies to bulk sewage sludge meeting the following criteria: pollutant concentrations at §503.13(b)(2); Class A pathogen requirements at §503.32(a); and one of the

vector attraction reduction requirement found at §503.33(b). Bulk sewage sludge of this quality may be applied to agricultural land, forest land, public contact site or a reclamation site. There are specific requirements for the preparer and the applier.

SLUDGE CONDITIONS

1. The permittee and the applier of the bulk sewage sludge shall comply with the following general requirements:

    a. Bulk sewage sludge shall not be applied to the land except in accordance with 40 CFR Part 503 Subpart B.
    b. Bulk sewage sludge shall not be applied if any of the cumulative pollutant loading rates in Paragraph 2c have been reached on the site.

    c. The permittee shall provide the person who supplies the bulk sewage sludge written notification of the concentration of total nitrogen (as N on a dry weight basis) in the bulk sewage sludge.

    d. The person who applies the bulk sewage sludge shall obtain notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart b.

    e. The person who applies the bulk sewage sludge shall obtain the following information:

        i. Prior to the application of bulk sewage sludge, the person who proposes to apply the bulk sewage shall contact the permitting authority for the state in which the bulk sewage sludge will be applied to determine whether bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) has been applied to the site since July 20, 1993.

        ii. If bulk sewage sludge subject to the cumulative pollutant loading rates has not been applied to the site, the cumulative amount for each pollutant listed in Paragraph 2c may be applied.

        iii. If bulk sewage sludge subject to the cumulative pollutant loading rates has been applied to the site since July 20, 1993, and the cumulative amount of each pollutant applied to the site since that date is known, the cumulative amount of each pollutant applied to the site shall be used to determine the additional amount of each pollutant that can be applied to the site such that the loading rates in Paragraph 2c are not exceeded.

        iv. If bulk sewage sludge subject to the cumulative pollutant loading rates has been applied to the site since July 20, 1993, and the cumulative amount of

each pollutant applied to the site since that date is not known, an additional amount of any pollutant may not be applied to the site.

f. When the permittee provides the bulk sewage sludge to a person who applies the bulk sewage sludge, the permittee shall provide the person who applies the bulk sewage notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

g. When the permittee provides the bulk sewage sludge to a person who prepares the bulk sewage sludge, the permittee shall provide the person who prepares the bulk sewage sludge notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

h. The person who applies the bulk sewage sludge shall provide the owner or lease holder of the land on which the bulk sewage sludge is applied notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

i. When the bulk sewage sludge is applied in another state, the person who prepares the sewage sludge shall provide notice to the permitting authority for the state in which the sewage sludge will be applied. Notice shall be given prior to the initial application and shall contain the following information:

   i. The location of each site by either street address or latitude and longitude.

   ii. The approximate period of time the bulk sewage sludge will be applied to each site.

   iii. The name, address, telephone number and National Pollutant Discharge Elimination System permit number (if applicable) for the person who prepares the bulk sewage sludge.

   iv. The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if applicable) for the person who applies the bulk sewage sludge.

j. The person who applies the bulk sewage sludge shall provide written notice, prior to the initial application of the bulk sewage sludge, to the permitting authority for the State in which the bulk sewage sludge will be applied. The notice shall include:

   i. The location, by either street address or latitude and longitude, of the land application site.

ii. The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) of the person who will apply the bulk sewage sludge.

2. Pollutant limitations

a. The maximum concentration of metal in the sewage sludge that is applied to the land shall not exceed the following (dry weight basis):

| | |
|---|---|
| Arsenic | 75 mg/kg |
| Cadmium | 85 mg/kg |
| Copper | 4300 mg/kg |
| Lead | 840 mg/kg |
| Mercury | 57 mg/kg |
| Molybdenum | 75 mg/kg |
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 7500 mg/kg |

b. The sewage sludge shall not be applied to the land if any of the pollutant concentrations in Paragraph 2a are exceeded.

c. The cumulative pollutant loading rates for each site shall not exceed the following (kilograms per hectare):

| | |
|---|---|
| Arsenic | 41 kilograms/hectare |
| Cadmium | 39 kilograms/hectare |
| Copper | 1500 kilograms/hectare |
| Lead | 300 kilograms/hectare |
| Mercury | 17 kilograms/hectare |
| Nickel | 420 kilograms/hectare |
| Selenium | 100 kilograms/hectare |
| Zinc | 2800 kilograms/hectare |

d. Bulk sewage sludge shall not be applied to a site on which any of the cumulative pollutant loading rates have been reached.

3. The permittee shall meet Class A pathogen requirements utilizing one of the methods specified in 40CFR §503.32

4. The permittee shall meet one of the vector attraction reduction requirements specified in 40CFR §503.33. The permittee may only utilize alternatives 1 through 8. If the permittee meets one of the vector attraction reduction alternatives 1 through 5, the Class A pathogen requirements must be met either prior to or at the same time as the vector attraction reduction requirement.

5. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2a, the pathogen density requirements and the vector attraction reduction requirements at the frequency specified in sludge condition 6 of the permit.

6. The person who applies the bulk sewage sludge to the land shall comply with the following management practices:

   a. The bulk sewage sludge shall not be applied to the land if it is likely to adversely affect threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated habitat.

   b. The bulk sewage sludge shall not be applied to agricultural land, forest land, a public contact site or a land reclamation site that is frozen, snow-covered or flooded so that the bulk sewage sludge enters a wetland or other water of the United States as defined in 40 CFR §122.2, except as provided in a permit issued pursuant to Section 402 or 404 of the Clean Water Act.

   c. Bulk sewage sludge shall not be applied to agricultural land, forest land, a public contact site, or a land reclamation site that is less than 10 meters (33 feet) from waters of the United States, as defined in 40 CFR §122.2.

   d. The whole sludge application rate shall be applied at an agronomic rate designed to (i) provide the amount of nitrogen needed by the crop or vegetation grown on the land and (ii) minimize the amount of nitrogen that passed below the root zone for the crop or vegetation grown on the land into the groundwater.

   e. The permittee shall develop and maintain the following information for five years:

   f. The concentration of each pollutant listed in paragraph 2a in the bulk sewage sludge.

g. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the Class A pathogen requirement in §503.32(a) and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through (b)(8), if one of the those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine or imprisonment."

h. A description of how the Class A pathogen requirements are met.

i. When the permittee is responsible for meeting the vector attraction reduction requirements, a description of how the vector attraction reduction requirements are met.

7. The person who applies the bulk sewage sludge shall develop and retain the following information indefinitely:

a. The location, by either street address of latitude and longitude, of each site on which bulk sewage sludge is applied.

b. The number of hectares in each site on which bulk sewage sludge is applied.

c. The date bulk sewage sludge is applied to each site.

d. The cumulative amount of each pollutant listed in Paragraph 2a in the bulk sewage sludge applied to each site, including the amount in Paragraph 1e(iii) of this section (in kilograms).

e. The amount of sewage sludge applied to each site (in metric tons).

f. The following certification statement:

"I certify, under penalty fo law, that the information that will be used to determine compliance with the requirements to obtain information in §503.12(e)(2){Paragraphs 1e (i through iv) of this permit) was prepared for each site on which sewage sludge was applied under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including fine and imprisonment."

g. A description of how the requirements to obtain the information in Paragraph 1e

(i through iv) are met.

8. The person who applies the bulk sewage sludge shall develop and maintain the following information for five years:

   a. The following certification statement:

   "I certify, under penalty of law, that the information that will be used to determine compliance with the management practices in §503.14 was prepared for each site on which sewage sludge was applied my direction and supervision in accordance with the system designed to ensured that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

   b. A description of how the management practices in Paragraphs 6a through d are met for each site.

   c. When the applier is responsible for meeting the vector attraction reduction requirements, the following certification statement:

   "I certify, under penalty of law, that the information that will be used to determine compliance with the vector attraction reduction requirement in [insert either §503.33(b)(9) or (b)(10)§] was prepared under my direction and supervision in accordance with the system designed to endure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

   d. When the applier is responsible for meeting the vector attraction reduction requirements, a description of how the vector attraction reduction requirement in either §503.33(b)(9) or (b)(10) is met.

   e. The permittee shall report the information in Paragraphs 7a, b, c and d annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of this permit.

9. When 90 percent or more of any of the cumulative pollutant loading rates are reached, the person who applies the bulk sewage sludge shall report the information in Paragraphs 10a through d annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of this permit.

10. All sludge sampling and analysis shall be in accordance with the procedures detailed in 40CFR §503.8.

11. The permittee shall notify the applier of the following information/requirements:

    a. Requirements in paragraphs 1b, 1d, 1e, 1j, 2c and 2d.
    b. Information in Paragraph 1c.
    c. The management practices in Paragraphs 6a through d.
    d. Record keeping requirements in Paragraph 8a through g and Paragraphs 9a through d.
    e. Reporting requirements in Paragraph 11.

12. If the permittee intends to apply sludge to land application sites not identified at the time of permit issuance, the permittee shall submit a land application plan 180 days prior to initial application at the new site. The plan shall:

    a. Describe the geographic area covered by the plan;
    b. Identify site selection criteria;
    c. Describe how sited will be managed; and
    d. Provide for advance public notice as required by state and local laws, and notice to landowners and occupants adjacent to or abutting the proposed land application site.

**1.3.5 Scenario No.5**

This scenario applies to bulk sewage sludge meeting the following criteria: pollutant concentrations at §503.13(b)(2); Class B pathogen requirements at §503.32(b); and one of the vector attraction reduction requirements found at §503.33(b). Bulk sewage sludge of this quality may be applied to agricultural land, forest land, public contact site or a reclamation site. There are specific requirements for the preparer and the applier.

SLUDGE CONDITIONS

1. The permittee and the applier of the bulk sewage sludge shall comply with the following general requirements:

    a. Bulk sewage sludge shall not be applied to the land except in accordance with 40 CFR Part 503 Subpart B.

    b. Bulk sewage sludge shall not be applied if any of the cumulative pollutant loading rates in Paragraph 2c have been reached on the site.

    c. The permittee shall provide the person who applies the bulk sewage sludge written notification of the concentration of total nitrogen (as N on a dry weight basis) in the bulk sewage sludge.
    d. The person who applies the bulk sewage sludge shall obtain notice and necessary

information to comply with the requirements of 40 CFR Part 503 Subpart B.

e. The person who applies the bulk sewage sludge shall obtain the following information:

i. Prior to application of bulk sewage sludge, the person who propose to apply the bulk sewage shall contact the permitting authority for the state in which the bulk sewage sludge will be applied to determine whether bulk sewage sludge subject to the cumulative pollutant loading rates in §503.13(b)(2) has been applied to the site since July 20, 1993.

ii. If bulk sewage sludge subject to the cumulative pollutant loading rates has not been applied to the site, the cumulative amount for each pollutant listed in Paragraph 2c may be applied.

iii. If bulk sewage sludge subject to the cumulative pollutant loading rates has been applied to the site since July 20, 1993, and the cumulative amount of each pollutant applied to the site since that date is known, the cumulative amount of each pollutant applied to the site shall be used to determine the additional amount of each pollutant that can be applied to the site such that the loading rates in Paragraph 2c are not exceeded.

iv. If bulk sewage sludge subject to the cumulative pollutant loading rates has been applied to the site since July 20, 1993, and the cumulative amount of each pollutant applied to the site since that date is not known, an additional amount of any pollutant may not be applied to the site.

f. When the permittee provides the bulk sewage sludge to a person who applies the bulk sewage sludge, the permittee shall provide the person who applies the bulk sewage notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

g. When the permittee provides the bulk sewage sludge to a person who prepares the bulk sewage sludge, the permittee shall provide the person who prepares the bulk sewage sludge notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

h. The person who applies the bulk sewage sludge shall provide the owner or lease holder of the land on which the bulk sewage sludge is applied notice and necessary information to comply with the requirements of 40 CFR Part 503 Subpart B.

i. When bulk sewage sludge is applied in another state, the person who prepares the

sewage sludge shall provide notice to the permitting authority for the state in which the sewage sludge will be applied. Notice shall be given prior to the initial application and shall contain the following information:

i. The location of each site by either street address or latitude and longitude.

ii. The approximate period of time the bulk sewage sludge will be applied to each site.

iii. The name, address, telephone number and National Pollutant Discharge Elimination System permit number (if applicable) for the person who prepares the bulk sewage sludge.

iv. The name, address, telephone number and National Pollutant Discharge Elimination System permit number (if applicable) for the person who applies the bulk sewage sludge.

j. The person who applies the bulk sewage sludge shall provide written notice, prior to the initial application of the bulk sewage sludge, to the permitting authority for the State in which the bulk sewage sludge will be applied. The notice shall include:

i. The location, by either street address or latitude and longitude, of the land application site.

ii. The name, address, telephone number and National Pollutant Discharge Elimination System permit number (if appropriate) of the person who will apply the bulk sewage sludge.

2. Pollutant limitations

a. The maximum concentration of metals in the sewage sludge that is applied to the land shall not exceed the following (dry weight basis):

| | |
|---|---|
| Arsenic | 75 mg/kg |
| Cadmium | 85 mg/kg |
| Copper | 4300 mg/kg |
| Lead | 840 mg/kg |
| Mercury | 57 mg/kg |
| Molybdenum | 75 mg/kg |

| | |
|---|---|
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 7500 mg/kg |

c. The sewage sludge shall not be applied to the land if any of the pollutant concentration in Paragraph 2a are exceeded.

d. The cumulative pollutant loading rates for each site shall not exceed the following (kilograms per hectare):

| | |
|---|---|
| Arsenic | 41 kilograms/hectare |
| Cadmium | 39 kilograms/hectare |
| Copper | 1500 kilograms/hectare |
| Lead | 300 kilograms/hectare |
| Mercury | 17 kilograms/hectare |
| Nickel | 420 kilograms/hectare |
| Selenium | 100 kilograms/hectare |
| Zinc | 2800 kilograms/hectare |

d. Bulk sewage sludge shall not be applied to a site on which any of the cumulative pollutant loading rates have been reached.

3. The permittee shall meet Class B pathogen requirements utilizing one of the methods specified in 40 CFR §503.32

4. The permittee shall meet one of vector attraction reduction requirements specified in 40 CFR §503.33

5. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2a, the pathogen density requirements and the vector attraction reduction requirements at the frequency specified in sludge condition 6 of the permit.

6. The person who applies the bulk sewage sludge shall insure that the following site restrictions are met for each site on which the bulk sewage sludge is applied:

a. Food crops with harvested parts that touch the sewage sludge/soil mixture and are

not totally above the land surface shall not be harvested for 14 months after application of sewage sludge.

b. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of sewage sludge when the sewage sludge remains on the land surface for four months or longer prior to incorporation into the soil.

c. Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into the soil.

d. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of sewage sludge.

e. Animals shall not be grazed on the land for 30 days after application fo sewage sludge.

f. Turf grown on land where sewage sludge is applied shall not be harvested for one year after application of the sewage sludge when the harvested turf is placed on either land with a high potential for public exposure or a lawn.

g. Public access to land with a high potential for public exposure shall be restricted for one year after application of sewage sludge.

h. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of sewage sludge.

7. The person who applies the bulk sewage sludge to the land shall comply with the following management practices:

a. The bulk sewage sludge shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated habitat.

b. The bulk sewage sludge shall not be applied to agricultural land, forest land, a public contact site or a land reclamation site that is frozen, snow-covered or flooded so that the bulk sewage sludge enters a wetland or other water of the United States as defined in 40 CFR §122.2, except as provided in a permit issued pursuant to Section 402 or 404 of the Clean Water Act.

c. Bulk sewage sludge shall not be applied to agricultural land, forest land, a public

contact site, or a land reclamation site that is less than 10 meters (33 feet) from waters of the United States, as defined in 40 CFR §122.2.

d. The whole sludge application rate shall be applied at an agronomic rate designated to (i) provide the amount of nitrogen needed by the crop or vegetation grown on that land; and (ii) minimize the amount of nitrogen that passes below the root zone for the crop or vegetation grown of the land into the groundwater.

8. The permittee shall develop and maintain the following information for five years:

a. The concentration of each pollutant listed in Paragraph 2a in the bulk sewage sludge.

b. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the Class B pathogen requirement in §503.32(b) and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through (b)(8), if one of those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility fo fine or imprisonment."

c. A description of how the Class B pathogen requirements are met.

d. When the permittee is responsible for meeting the vector attraction reduction requirements, a description of how the vector attraction reduction requirements are met.

9. The person who applies the bulk sewage sludge shall develop and retain the following information indefinitely:

a. The location, by either street address of latitude and longitude, of each site on which bulk sewage sludge is applied.

b. The number of hectares in each site on which bulk sewage sludge is applied.

c. The date bulk sewage sludge is applied to each site.

d. The cumulative amount of each pollutant listed in Paragraph 2a in the bulk sewage sludge applied to each site, including the amount in Paragraph 1e(iii) of this section. (in kilograms)

e. The amount of sewage sludge applied to each site (in metric tons).

f. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the requirement to obtain information in §503.12(e)(2){Paragraphs 1e (i through iv) of this permit.} was prepared for each site on which bulk sewage sludge was applied under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including fine and imprisonment."

g. A description of how the requirements to obtain information Paragraphs 1.e. (i through iv) are met.

10. The person who applies the bulk sewage sludge shall develop and maintain the following information for five years:

a. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the management practices in §503.14 was prepared for each site on which bulk sewage sludge was applied under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

b. A description of how the management practices in Paragraphs 7a through d are met for each site.

c. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the site restriction in §503.32(b)(5) for each site on which Class B sewage sludge was applied was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including fine and imprisonment."

d. A description of how the site restrictions are met for each site.

e. When the applier is responsible for meeting the vector attraction reduction requirements, the following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the vector attraction reduction requirement in [insert either §503.33(b)(9) or (b)(10)] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

f. When the applier is responsible for meeting the vector attraction reduction requirements, a description of how the vector attraction reduction requirement in either §503.33(b)(9) or (b)(10) is met.

11. The permittee shall report the information in Paragraphs 8a, b, c and annually on February 19. Reports shall be submitted to the address in the Monitoring and Reporting section of this permit.

12. When 90 percent or more of any of the cumulative pollutant loading rates are reached, the person who applies the bulk sewage sludge shall report the information in Paragraphs 10a through d annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of this permit.

13. All sludge sampling and analysis shall be in accordance with the procedures detailed in 40 CFR §503.8

14. The permittee shall notify the applier of the following information/requirements:

a. Requirements in Paragraphs 1b, 1d, 1e, 1j, 2c and 2d.
b. Information in Paragraph 1c.
c. The management practices in Paragraphs 7a through d.
d. The site restrictions in paragraphs 6a through h.
e. Record keeping requirements is Paragraph 9a through g and Paragraphs 10a through d.
f. Reporting requirements in Paragraph 12.

15. If the permittee intends to apply sludge to land application sites not identified at the time of permit issuance, the permittee shall submit a land application plan 180 days prior to initial application at the new site. The plan shall:

a. Describe the geographic area covered by the plan;
b. Identify site selection criteria;
c. Describe how sites will be managed; and
d. Provide for advance public notice as required by state and local laws, and notice to landowners and occupants adjacent to or abutting the proposed land application site.

**1.3.6. Scenario No.6**

This scenario applies to bagged materials sold or given away meeting the annual pollutant loading rates at §503.32(a); and one of the vector attraction reduction requirements at §503.33(b)(1) through (b)(8).

SLUDGE CONDITIONS

1. The permittee and the applier shall meet the following requirements:

   a. The sewage sludge shall be applied in accordance with 40 CFR Part 503 Subpart B.

   b. The person who applies the sewage sludge shall obtain the information needed to comply with 40 CFR Part 503 Subpart B.

   c. When the permittee provides the sewage sludge to a person who prepares the sewage sludge, the permittee shall provide the person who prepares the sewage sludge notice and necessary information to comply with 40 CFR Part 503 Subpart B.

2. Pollutant Limitations

   a. The maximum concentration of metals in the sewage sludge that is applied to the land shall not exceed the following (dry weight basis):

| | |
|---|---|
| Arsenic | 75 mg/kg |
| Cadmium | 85 mg/kg |
| Copper | 4300 mg/kg |
| Lead | 840 mg/kg |
| Mercury | 57 mg/kg |
| Molybdenum | 75 mg/kg |

| | |
|---|---|
| Nickel | 420 mg/kg |
| Selenium | 100 mg/kg |
| Zinc | 7500 mg/kg |

b. The sewage sludge shall not be applied to the land if any of the pollutant concentrations in Paragraphs 2a are exceeded.

c. The product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge shall not cause the annual pollutant loading rate for the pollutant loading rates are specified below (kilograms per hectare per 365 day period):

| | |
|---|---|
| Arsenic | 2.0 |
| Cadmium | 1.9 |
| Copper | 75 |
| Lead | 15 |
| Mercury | 0.85 |
| Nickel | 21 |
| Selenium | 5.0 |
| Zinc | 140 |

d. The annual whole sludge application rate shall be determined in the following manner:

i. Analyze a sample of the sewage sludge to determine the concentration for each pollutant listed in Paragraph 2a.

ii Using the pollutant concentrations from Paragraph 2d(i) and the annual pollutant loading rates from Paragraph 2c, calculate the annual whole sludge application rate using the following equation:

$$AWSAR = \frac{APLR}{C \times 0.001}$$

Where:

AWSAR = Annual whole sludge application rate in metric tons per

hectare per 365 day period (dry weight basis)

APLR = Annual pollutant loading rate in kilograms per hectare per 365 day period.

C = Pollutant concentration in milligrams per kilogram of total solids (dry weight basis)

0.001 = Conversion factor

iii The AWSAR for the sewage sludge is the lowest AWSAR calculated in Paragraph 2d(ii).

3. Label Requirements

a. Either a label shall be affixed to the bag or other container in which the sewage sludge is sold or given away or an information sheet shall be provided to any person who receives the sewage sludge.

b. The label information sheet shall contain the following information:

i. The name and address of the person who prepared the sewage sludge.

ii. A statement that application of sewage sludge to the land is prohibited except in accordance with the instructions on the label or information sheet.

iii. The annual whole sludge application rate which does not cause the annual pollutant loading rates in Paragraph 2c to be exceeded.

4. The permittee shall meet Class A pathogen requirements utilizing one of the methods specified in 40 CFR §503.32

5. The permittee shall meet one of the vector attraction reduction requirements specified in 40 CFR §503.33. The permittee may only utilize alternatives 1 through 8. If the permittee meets one of the vector attraction reduction alternatives 1 through 5, the Class A pathogen requirements must be met either prior to or at the same time as the vector attraction reduction requirement.

6. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2a, the pathogen density, and the vector attraction reduction requirement at the frequency specified in sludge condition 6 of the permit.

7. The permittee shall develop and retain the following information for five years:

   a. The annual whole sludge application rate that does not cause the annual pollutant loading rates in Paragraph 2c to be exceeded.

   b. The concentration of each pollutant in Paragraph 2a in the sewage sludge.

   c. The following certification statement:

   "I certify, under penalty of law, that the information that will be used to determine compliance with the management practice in §503.14(e), the Class A pathogen requirement in §503.32(a), and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through (b)(8)] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine or imprisonment."

   d A description of how the Class A pathogen requirements are met.

   e. A description of how the vector attraction reduction requirements are met.

8. The permittee shall report the information in Paragraphs 7a through e annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting Section of this permit.

9. All sewage sludge sampling and analysis procedures shall be in accordance with procedures detailed in 40 FR §503.8.

## 2. SURFACE DISPOSAL

This section applies to sewage sludge from the permittee's facility which is by surface disposed. The permittee should answer the following questions. The answer to these questions need to be evaluated to determine which permitting scenario for sewage sludge surface disposal applies. After the permitting scenario is determined, the permittee must comply with the directives contained in the chosen scenario. The permittee must also note the run-off from surface disposal units may be subject to stormwater regulations.

### 2.1 Question Algorithm

The permittee should review and answer the following questions. The information gathered from answering these questions will aid the permittee in determine the appropriate surface disposal scenario which applies to the sludge generated at the permittee's wastewater treatment facility. The scenario selected will detail which specific Use or Disposal of Sewage Sludge, Part 503, regulations must be complied with for the land application method used by the permittee.

1. Is the facility regulated under 40 CFR §503?

   If the facility disposes of its sludge at a municipal solid waste landfill (MSWLF), 40 CFR §503 regulations do not apply. However, the permittee still has some responsibilities. Permit language is in Scenario No.4.

   The 40 CFR §503 regulations also do not apply in the case of storage of sewage sludge. An EPA rule of thumb is sludge stored on the land for longer than two years is defined as surface disposal. If a permittee claims storage, or treatment, the permittee's facility must be specifically equipped to support sewage sludge storage. Further, the permittee must ultimately have a clear, final disposition for the sewage sludge.

2. Does the following situations exist at a permittee's active sewage sludge disposal unit?

   a. The unit is located within 60 meters (200 feet) of a fault that has had displacement in the Holocene time (10,000 years);

   b. A unit located in a unstable area; or

   c. A unit located in a wetland without a Section 402 or 404 permit.

If any of these situations exist, the active sewage sludge unit should have closed by March 22, 1994. If the active sewage sludge disposal unit is still operating, but one of the previous situations does apply to the unit, that unit must be closed.

3. Can the permittee's sewage sludge disposal unit demonstrate they are designed to withstand seismic impacts? If this demonstration cannot be made, the unit must close. This demonstration should be made prior to permit issuance.

4. Does the facility have a liner and leachate collection system?

   The liner must have a hydraulic conductivity of 1 X $10^{-7}$ centimeters per second or less. If the liner does not meet the specified hydraulic conductivity, the sludge disposal unit is regulated as an **unlined** sewage sludge disposal site. There are no pollutant limitations for lined units.

5. What is the distance from the property boundary to the boundary of the active sewage sludge unit? Use the tables below to determine appropriate pollutant limitations for units without a liner or leachate collection on a dry weight basis.

**§503.23 TABLE 1**
**Active Unit Boundary is 150 Meters or More**
**From Property Boundary**

| | |
|---|---|
| Arsenic | 73 mg/kg |
| Chromium | 600 mg/kg |
| Nickel | 420 mg/kg |

**§503.23 TABLE 2**
**Active Unit Boundary is Less Than 150 Meters**
**From Property Boundary**

| Distance (meters) | Pollutant Concentrations (mg/kg) | | |
|---|---|---|---|
| | Arsenic | Chromium | Nickel |
| 0<Distance<25 | 30 | 200 | 210 |
| 25<Distance<50 | 34 | 220 | 240 |
| 50<Distance<75 | 39 | 260 | 270 |
| 75<Distance<100 | 46 | 300 | 320 |
| 100<Distance<125 | 53 | 360 | 390 |
| 125<Distance<150 | 62 | 450 | 420 |

6. Does the facility cover the sewage sludge placed in the unit daily?

This practice is considered to achieve both pathogen reduction and vector attraction reduction. If a facility covers the sludge, the permittee must monitor for methane gas.

## 2.2. Scenario Determination

After the information is gathered and evaluated from the questions in the preceding section, the permittee can select the appropriate surface disposal scenario.

**Surface Disposal Scenario Selection Table**

| SCENARIO | LINED/UNLINED | DISTANCE TO UNIT BOUNDARY |
|---|---|---|
| No.1 | Unlined | <150m |
| No.2 | Unlined | 0 to 150m |
| No.3 | Lined | NA |
| No.4 | Disposed in Municipal Solid Waste Land Fill | NA |

## 2.3. Scenarios

2.3.1. Scenario No.1
Active sewage sludge unit without a liner and leachate collection system with active sewage sludge unit boundary 150 meters or more from the property boundary.

SLUDGE CONDITIONS

1. The permittee and the owner/operator of an active sewage sludge unit shall comply with the following requirements:

    a. Sewage sludge shall not be placed in an active sewage sludge unit unless the requirement of 40 CFR Part 503, Subpart C are met.

    b. An active sewage sludge unit located within 60 meters of a fault that has had displacement in Holocene time; located in an unstable area; or located in a wetland, except as provided in a permit issued pursuant to Section 402 or 404 of the Clean Water Act, shall close by March 22, 1994, unless, in the case of an active sewage sludge unit located within 60 meters of a fault that has displacement n Holocene time, otherwise specified by the permitting authority.

i. The owner/operator of an active sewage sludge unit shall submit a written closure and post closure plan to EPA 180 days prior to the date an active sewage sludge unit closes.

ii. The closure plan shall consider the elements outlined in Section 6. If an element is not applicable, the owner/operator shall state the reasons in the plan.

c. The owner of a surface disposal site shall provide written notification to the subsequent owner of the site that sewage sludge was place on the site. The notice should include elements outlined in Section 7. A copy of the notification shall be submitted to the EPA.

2. Pollutant limitations

a. The maximum concentration of pollutants in the sewage sludge placed in an active sewage sludge unit shall not exceed the following:

| | |
|---|---|
| Arsenic | 73 mg/kg |
| Chromium | 600 mg/kg |
| Nickel | 420 mg/kg |

b. Sewage sludge with metals concentrations which exceed the limitations in Paragraph 2a. shall not be placed in a surface disposal unit.

3. The permittee and the owner/operator shall comply with the following management practices:

a. The sewage sludge shall not be placed on an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated critical habitat.

b. The run-off from an active sewage sludge unit shall be collected and disposed in accordance with applicable stormwater regulations.

c. The run-off collection system for an active sewage sludge unit shall have the capacity to control run-off from a 24 hour - 25 year storm event.

d. i. When a daily cover is placed on an active sewage sludge unit, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit, 1.25 percent by volume, for methane gas during the period that the sewage sludge unit is active.

ii The concentration of methane gas in air at the property line of the surface disposal site shall not exceed the lower explosive limit, 5 percent by volume, for methane gas during the period that the sewage sludge unit is active.

e i When a final cover is placed on a sewage sludge unit at closure, and for three years after closure, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25 percent by volume, for methane gas.

ii The concentration of methane gas in air at the property line of the surface disposal site shall not exceed the lower explosive limit, 5 percent by volume, for methane gas for three years after the sewage sludge unit closes.

f. A food crop, a feed crop, or a fiber crop shall not be grown on an active sewage sludge unit. The owner/operator of the sewage sludge unit must demonstrate to EPA that public health and the environment are protected from reasonably anticipated adverse effects of pollutants in sewage sludge when crops are grown on a sewage sludge unit.

g. Animals shall not be grazed on an active sewage sludge unit. The owner/operator of the sewage sludge unit must demonstrate to EPA that public health and the environment are protected from reasonably anticipated adverse effects of pollutants in sewage sludge when animals are grazed on a sewage sludge unit.

h. Public access to a surface disposal site shall be restricted for the period that the surface disposal site contains an active sewage sludge unit and for three years after the last sewage sludge unit closes.

i. i. Sewage sludge placed in an active sewage sludge unit shall not contaminate an aquifer.

ii The permittee shall demonstrate that sewage sludge place in an active sewage sludge unit does not contaminate an aquifer by either (1) submission of results of a groundwater monitoring program developed by a qualified groundwater scientist; or (2) submission of a certification by a

qualified groundwater scientist that the sewage sludge does not contaminate and aquifer.

4. The following conditions must be documented by the permittee and owner/operator:

   a. An active sewage sludge unit shall not restrict the flow of a base flood.

   b. If a surface disposal site is located in a seismic impact zone, an active sewage sludge unit shall be designated to withstand the maximum recorded horizontal ground level acceleration.

   c. An active sewage sludge unit shall be located 60 meters or more from a fault that has displacement in Holocene time.

   d. An active sewage sludge unit shall not be located in an unstable area.

   e. An active sewage sludge unit shall not be located in a wetland.

5. If the active sewage sludge unit is not covered daily, the permittee shall meet either Class A or Class B pathogen reduction utilizing one of the methods in Section 4, and one of the vector attraction reduction requirements in Section 5.

6. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2, the pathogen density, and the vector attraction reduction requirements at the following frequency:

| **SEWAGE SLUDGE PRODUCED (metric tons per 365 day period)** | **SAMPLING FREQUENCY** |
|---|---|
| 0<Sludge(tons)<290 | Once per year |
| 0≤Sludge(tons)<1500 | Once per quarter (four times per year) |
| 1500≤Sludge(tons)<15000 | Once per 60 days (six times per year) |
| Sludge(tons)≤15000 | Once per Month (12 times per year) |

7. When a daily cover is placed on an active sewage sludge unit, the air in the structures within a surface disposal site and at the property line of the surface disposal site shall be monitored continuously for methane gas during the time that the surface disposal site contains an active sewage sludge unit and for three years after the sewage sludge unit closes.

8. The permittee shall develop and retain the following information for five years:

a. The concentration for each pollutant listed in Paragraph 2a.

b. The following certification statement:

"I, certify, under penalty of law, that the information that will be used to determine compliance with the pathogen requirements in [insert §503.32(a), §503.32(b)(3)or §503.32(b)(4) when one of those requirements is met] and the vector attraction reduction requirements in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through §503.33(b)(8) when one of those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including that possibility of fine or imprisonment."

c. A description of how the pathogen requirements are met.

d. When the permittee is responsible for the vector attraction reduction requirements, a description of how the vector attraction reduction requirements are met.

9. The owner/operator of the surface disposal site shall develop and retain the following information for five years:

a. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with the management practices in §503.24 and the vector attraction reduction requirement in [insert one of the requirements in §503.33(b)(9) through (b)(11) if one of those requirements is met] was prepared under my direct supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

b. A description of how the management practices in Paragraphs 3a through 3i are met.

c. Documentation that the requirements in Paragraphs 4a through 4e are met.

d. A description of how the vector attraction reduction requirements are met, if the owner/operator is responsible for vector attraction reduction requirements.

10. The permittee shall report the information in Paragraphs 7a through 7d annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of the permit.

11. All sewage sludge sampling and analysis procedures shall be in accordance with the procedures detailed in Section 7.

12. If the permittee is not the owner/operator of the surface disposal site, the permittee shall notify the owner/operator of the following:

    a. The requirements in Paragraphs 1a through 1c;
    b. The management practices in Paragraphs 3a through 3i;
    c. The requirements in Paragraphs 4a through 4e;
    d. The requirement in Paragraph 7; and
    e. The record keeping requirements in Paragraph 9a through 9d.

**2.3.2. Scenario No.2**

Active sewage sludge unit without a liner and leachate collection system located less than 150 meters from the property line. The permittee is directed to §503.33 TABLE 2, Active Unit Boundary is Less Than 150 Meters From Property Boundary in order to determine the maximum concentrations pollutants for the appropriate distant to the units boundary.

SLUDGE CONDITIONS

1. The permittee and the owner/operator of an active sewage sludge unit shall comply with following requirements:

    i. Sewage sludge shall not be placed in an active sewage sludge unit unless the requirement of 40 CFR Part 503, Subpart C are met.

    ii. An active sewage sludge unit located within 60 meters of a fault that has had displacement in Holocene time; located in an unstable area; or located in a wetland, except as provided in a permit issued pursuant to Section 402 or 404 of the Clean Water Act, shall close by March 22, 1994, unless, in the case of an active sewage sludge unit located within 60 meters of a fault that has displacement in Holocene time, otherwise specified by the permitting authority.

    i. The owner/operator of an active sewage sludge unit shall submit a written closure and post closure plan to EPA 180 days prior to the date an active sewage sludge unit closes.

ii The closure plan shall consider the elements outlined in Section 6. If an element is not applicable, the owner/operator shall state the reasons in the plan.

c. The owner of a surface disposal site shall provide written notification to the subsequent owner of the site that sewage sludge was place on the site. The notice should include elements outlined in Section 7. A copy of the notification shall be submitted to the EPA.

2. Pollutant limitations

a. The maximum concentration of pollutant in the sewage sludge placed in an active sewage sludge unit shall not exceed the following:

**§503.23 TABLE**
**Active Unit Boundary is Less Than 150 Meters**
**From Property Boundary**

| **Distance (meters)** | **Pollutant concentrations (mg/kg)** | | |
|---|---|---|---|
| | Arsenic | Chromium | Nickel |
| 0<Distance<25 | 30 | 200 | 210 |
| 25<Distance<50 | 34 | 220 | 240 |
| 50<Distance<75 | 39 | 260 | 270 |
| 75<Distance<100 | 46 | 300 | 320 |
| 100<Distance<125 | 53 | 360 | 390 |
| 125<Distance<150 | 62 | 450 | 420 |

b. Sewage sludge with metals concentrations which exceed the limitations in Paragraph 2a. shall not be placed in a surface disposal unit.

3. The permittee and the owner/operator shall comply with the following management practices:

a. The sewage sludge shall not be placed on an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated critical habitat.

b. The run-off form an active sewage sludge unit shall be collected and disposed in accordance with applicable stormwater regulations.

c. The run-off collection system for an active sewage sludge unit shall have the capacity to control run-off from a 24 hour - 25 year storm event.

d. i. When a daily cover is placed on an active sewage sludge unit, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit, 1.25 percent by volume, for methane gas during the period that the sewage sludge unit is active.

2. The concentration of methane gas in air at the property line of the surface disposal site shall not exceed the lower explosive limit, 5 percent by volume, for methane gas during the period that the sewage sludge unit is active.

e. i. When a final cover is placed on a sewage sludge unit at closure, and for three years after closure, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit, 1.25 percent by volume, for methane gas.

2. The concentration of methane gas in air at the property line of the surface disposal site shall not exceed the lower explosive limit, 5 percent by volume, for methane gas for three years after the sewage sludge unit closes.

f. A food crop, a feed crop or fiber crop shall not be grown on an active sewage sludge unit. The owner/operator of the sewage sludge unit must demonstrate to EPA that public health and the environment are protected from reasonably anticipated adverse effects of pollutants in sewage sludge when crops are grown on a sewage sludge unit.

g. Animals shall not be grazed on an active sewage sludge unit. The owner/operator of the sewage sludge unit must demonstrate to EPA that public health and the environment are protected from reasonably anticipated adverse effects of pollutants in sewage sludge when animals are grazed on a sewage sludge unit.

h. Public access to a surface disposal site shall be restricted for the period that the surface disposal site contains an active sewage sludge unit and for site contains an active sewage sludge unit and for three years after the last sewage unit closes.

i. i. Sewage sludge placed in an active sewage sludge unit shall not contaminate an aquifer.

2. The permittee shall demonstrate the sewage sludge place in an active sewage sludge unit does not contaminate an aquifer by either (i) submission of results of a groundwater monitoring program developed by a qualified groundwater scientist; or (2) submission of certification by a qualified groundwater scientist that the sewage sludge does not contaminate an aquifer.

4. The following conditions must be documented by the permittee and owner/operator:

a. An active sewage sludge unit shall not restrict the flow of a base flood.

b. If a surface disposal site is located in seismic impact zone, an active sewage sludge unit shall be designed to withstand the maximum recorded horizontal ground level acceleration.

c. A active sewage sludge unit shall be located 60 meters or more from a fault that has displacement in Holocene time.

d. An active sewage sludge unit shall not be located in an unstable area.

e. An active sewage sludge unit shall not be located in a wetland.

5. If the active sewage sludge unit is not covered daily, the permittee shall meet either Class A or Class B pathogen reduction utilizing one of the methods in Section 4, and one of the vector attraction reduction requirements in Section 5.

6. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2, the pathogen density, and the vector attraction reduction requirements at the following frequency:

**Sampling Frequency Table**

| **SEWAGE SLUDGE PRODUCED** (metric tons per 365 day period) | **SAMPLING FREQUENCY** |
|---|---|
| 0<Sludge(tons)<290 | Once per Year |
| 0≤Sludge(tons)<1500 | Once Per Quarter (four times per year) |
| 1500≤Sludge(tons)<15000 | Once per 60 Days (six times per year) |
| Sludge(tons)≤15000 | Once per Month (12 times per year) |

7. When a daily cover is placed on an active sewage sludge unit, the air in the structures within a surface disposal site and at the property line of the surface disposal site shall be monitored continuously for methane gas during the time that the surface disposal site contains an active sewage sludge unit and for three years after the sewage sludge unit closes.

8. The permittee shall develop and retain the following information for five years:

   a. The following certification statement:

   "I, certify, under penalty of law, that the information that will be used to determine compliance with the pathogen requirements in [insert §503.32(a), §503.32(b)(2), §503.32(b)(4) when one of those requirements is met] and the vector attraction reduction requirements in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through §503.33(b)(8) when one of those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine or imprisonment."

   b. A description of how the pathogen requirements are met.

   c. When the permittee is responsible for the vector attraction reduction requirements, description of how the vector attraction reduction requirements are met.

9. The owner/operator of the surface disposal site shall develop and retain the following information for five years:

   a. The concentration of each pollutant listed in Paragraph 2a.

   b. The following certification statement:

   "I certify, under penalty of law, that the information that will be used to determine compliance with the management practices in §503.24 and the vector attraction reduction requirement in [insert one of the requirements in §503.33(b)(9) through (b)(11) if one of those requirements is met] was prepared under my direct supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

   c. A description of how the management practices in Paragraphs 3a through 3i are met.

d. Documentation that the requirements in Paragraphs 4a through 4e are met.

e. A description of how the vector attraction reduction requirements are met, if the owner/operator is responsible for vector attraction reduction requirements.

10. The permittee shall report the information in Paragraphs 7a through 7d annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of the permit.

11. All sewage sludge sampling and analysis procedures shall be in accordance with the procedures detailed in Section 7.

12. If the permittee is not the owner/operator of the surface disposal site, the permittee shall notify the owner/operator of the following:

a. The requirements in Paragraphs 1a through 1c;
b. The management practices in Paragraphs 3a through 3i;
c. The requirements in Paragraphs 4a through 4e;
d. The requirement in Paragraph 7; and
e. The record keeping requirements in Paragraph 9a through 9e.

**2.3.3. Scenario No.3**

This applies to an active sewage sludge unit with a liner and a leachate collection system.

SLUDGE CONDITIONS

1. The permittee and the owner/operator of an active sewage sludge unit shall comply with the following requirements:

a. Sewage sludge shall not be placed in an active sewage sludge unless the requirement of 40 CFR Part 503, Subpart C are met.

b. An active sewage sludge unit located within 60 meters of a fault that has had displacement in Holocene time; located in an unstable area; or located in a wetland, except as provided in a permit issued pursuant to Section 402 or 404 of the Clean Water Act, shall close by March 22, 1994, unless, in the case of an active sewage sludge unit located within 60 meters of fault that has displacement in Holocene time, otherwise specified by the permitting authority.

i. The owner/operator of an active sewage sludge unit shall submit a written closure and post closure plan to EPA 180 days prior to the

date an active sewage sludge unit closes.

ii. The closure plan shall consider the elements outlined in Section 6. If an element is not applicable, the owner/operator shall state the reasons in the plan.

c. The owner of a surface disposal site shall provide written notification to the subsequent owner of the site that sewage sludge was placed on the site. The notice should include elements outlined in Section 7. A copy of the notification shall be submitted to the EPA.

2. The permittee shall comply with the following management practices:

a. The sewage sludge shall not be placed on an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species listed under Section 4 of the Endangered Species Act or its designated critical habitat.

b. The run-off from an active sewage sludge unit shall be collected and disposed in accordance with applicable stormwater regulations.

c. The run-off collection system for an active sewage sludge unit shall have the capacity to handle run-off from a 24 hour - 25 year storm event.

d. The leachate collection system for an active sewage sludge unit shall be operated and maintained during the period the sewage sludge unit is active and for three years the sewage sludge unit closes.

e. The leachate shall be collected and disposed of in accordance with applicable regulations during the period the sewage sludge unit is active and for three years after it closes.

f. i. When a daily cover is placed on an active sewage sludge unit, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit, 1.25 percent by volume, for methane gas during the period that the sewage sludge unit is active.

ii. The concentration of methane gas in air at the property line of the surface disposal site shall not exceed the lower explosive limit, 5 percent by volume, for methane gas during the period that the sewage sludge unit is active.

g. i. When a final cover is placed on a sewage sludge unit at closure, and for three years after closure, the concentration of methane gas in air in any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit, 1.25 percent by volume, for methane gas.

ii The concentration of methane gas in air at the property line of the surface disposal site shall not exceed the lower explosive limit, 5 percent by volume, for methane gas for three years after the sewage sludge unit closes.

h. A food crop, a feed crop, or fiber crop shall not be grown on an active sewage sludge unit. The owner/operator of the sewage sludge unit must demonstrate to EPA that public health and the environment are protected from reasonably anticipated adverse effects of pollutants in sewage sludge when crops are grown on a sewage sludge unit.

i. Animals shall not be grazed on an active sewage sludge unit. The owner/operator of the sewage sludge unit must demonstrate to EPA that public health and the environment are protected from reasonably anticipated adverse effects of pollutants in sewage sludge when animals are grazed on a sewage sludge unit.

j. Public access to a surface disposal site shall be restricted for the period that the surface disposal site contains an active sewage sludge unit and for three years the last sewage sludge unit closes.

k. i. Sewage sludge placed in an active sewage sludge unit shall not contaminate an aquifer.

ii The permittee shall demonstrate that sewage sludge place in an active sewage sludge unit does not contaminate an aquifer by either (1) submission of results of a groundwater monitoring program developed by a qualified groundwater scientist; or (2) submission of a certification by a qualified groundwater scientist that the sewage sludge does not contaminate an aquifer.

3. The following conditions must be documented by the permittee and owner/operator:

a. An active sewage sludge unit shall not restrict the flow of a base flood.

b. If a surface disposal site is located in a seismic impact zone, an active sewage sludge unit shall be designed to withstand the maximum recorded horizontal ground level acceleration.

c. A active sewage sludge unit shall be located 60 meters or more from a fault that has displacement in Holocene time.

d. An active sewage sludge unit shall not be located in an unstable area.

e. An active sewage sludge unit shall not be located in a wetland.

4. If the active sewage sludge unit is not covered daily, the permittee shall meet either Class A or Class B pathogen reduction utilizing one of the methods in Section 4, and one of the vector attraction reduction requirements in Section 5.

5. The permittee shall monitor the sewage sludge for the pollutants in Paragraph 2, the pathogen density, and the vector attraction reduction requirements at the following frequency:

**Sampling Frequency Table**

| **SEWAGE SLUDGE PRODUCED** (metric tons per 365 day period) | **SAMPLING FREQUENCY** |
|---|---|
| 0<Sludge(tons)<290 | Once per Year |
| 0<Sludge(tons)<1500 | Once Per Quarter (four times per year) |
| 1500<Sludge(tons)<15000 | Once per 60 Days (six times per year) |
| Sludge(tons)<15000 | Once per Month (12 times per year) |

6. When a daily cover is placed on an active sewage sludge unit, the air in the structures within a surface disposal site and at the property line of the surface disposal site shall be monitored continuously for methane gas during the time that the surface disposal site contains an active sewage sludge unit and for three years after the sewage sludge unit closes.

7. The permittee shall develop and retain the following information for five years:

a. The following certification statement:

"I, certify, under penalty of law, that the information that will be used to determine compliance with the pathogen requirements in [insert §503.32(a), §503.32(b)(2), §503.32(b)(3) or §503.32(b)(4) when one of those requirements is

met] and the vector attraction reduction requirements in [insert one of the vector attraction reduction requirements in §503.33(b)(1) through §503.33(b)(8) when one of those requirements is met] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine or imprisonment."

b. A description of how the pathogen requirements are met.

c. When the permittee is responsible for the vector attraction reduction requirements, a description of how the vector attraction reduction requirements are met.

8. The owner/operator of the surface disposal site shall develop and retain the following information for five years:

a. The following certification statement:

"I certify, under penalty of law, that the information that will be used to determine compliance with management practices in §503.24 and the vector attraction reduction requirement in [insert one of the requirements in §503.33(b)(9) through (b)(11) if one of those requirements is met] was prepared under my direct supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

b. A description of how the management practices in Paragraphs 2a through 2k are met.

c. Documentation that the requirements in Paragraphs 3a through e are met.

d. A description of how the vector attraction reduction requirements are met, if the owner/operator is responsible for vector attraction reduction requirements.

9. The permittee shall report the information in Paragraphs 8a through c annually on February 19. Reports shall be submitted to EPA at the address in the Monitoring and Reporting section of the permit.

10. All sewage sludge sampling and analysis procedures shall be in accordance with the procedures detailed in Section 7.

11. If the permittee is not the owner/operator of the surface disposal site, the permittee shall notify the owner/operator of the following:

    a. The requirements in Paragraphs 1a through e;
    b. The management practices in Paragraphs 2a through k;
    c. The requirements in Paragraph 3a through e;
    d. The requirement in Paragraph 6; and
    e. The record keeping requirements in Paragraphs 8a through d.

**2.3.4. Scenario No.4**

A permittee who dispose of their sludge in a municipal solid waste land fill are regulated under 40 CFR Part 258.

SLUDGE CONDITIONS

1. The permittee must dispose of the sewage sludge in a landfill which is in compliance with 40 CFR Part 258.

2. Sewage sludge disposed of in a municipal solid waste landfill shall not be hazardous. The Toxicity Characterization Leachate Protocol (TCLP) shall be used as demonstration that the sludge is non-hazardous.

3. The sewage sludge must not be liquid as determined by the Paint Filter Liquids Test method (Method 9095 as described in “Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, EPA publication No. SW-846).

### 3. Incineration

Each facility that incinerates sewage sludge is still subject to 40 CFR Part 503 regulations. Implementation of these regulations are site specific. A facility which incinerates sewage sludge will have specific conditions for that incineration process included in the facility's NPDES permit.

## 4. Pathogens Reduction

Allowable pathogen reduction alternatives are listed in this section. The corresponding reference to the regulation is listed in parenthesis.

### 4.1 Class A Pathogen Reduction

#### 4.1.1. Class A – Alternative 1 (503.32(a)(3))

i. Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), §5.3.10(c), §503.10(e) or §503.10(f).

ii. The temperature of the sewage sludge that is used or disposed shall be maintained at a specific value for a period of time.

a. When the percent solids of the sewage sludge is seven percent or higher, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 20 minutes or longer; and the temperature and time period shall be determined using equation (3), except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{13{,}700{,}000}{10^{0.1400t}} \qquad (3)$$

Where,

D = time in days
T = temperature in degrees Celsius

b. When the percent solids of the sewage sludge is seven percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 degrees Celsius or higher; the time period shall be 15 seconds or longer; and the temperature and time period shall be determined using equation (3).

c. When the percent solids of the sewage sludge is less than seven percent and the time period is at least 15 seconds, but less than 30 minutes, the temperature and time period shall be determined using equation (3).

d. When the percent solids of the sewage sludge is less than seven percent; the temperature of the sewage sludge is 50 degrees Celsius or higher; and the time period is 30 minutes or longer, the temperature and time period shall be determined using equation (4).

$$D = \frac{50{,}070{,}000}{10^{0.1400t}} \qquad (4)$$

Where,

D = time in days.
t = temperature in degrees Celsius.

**4.1.2. Class A - Alternative 2** (503.32(a)(4))

i. Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), §503.10(c), §503.10(e) or §503.10(f).

ii a.. The pH of the sewage sludge that is used or disposal shall be raised to above 12 and shall remain above 12 for 72 hours.

b. The temperature of the sewage sludge shall be above 52 degrees Celsius for 12 hours or longer during the period that the pH of the sewage sludge is above 12.

c. At the end of the 72 hour period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

**4.1.3. Class A - Alternative 3** (503.32(a)(5))

i. Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), §503.10(c), §503.10(e) or §503.10(f).

ii a. The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.

b. When the density of enteric values in the sewage sludge prior to pathogen treatment is less than one Plaque-forming Unit per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.

c. When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one Plaque-forming Unit per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses in the sewage sludge after pathogen treatment is less than one Plaque-forming Unit per four grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.

d. After the enteric virus reduction in ii.c. of this subsection is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented in ii.c. of this subsection.

iii. a. The sewage sludge shall be analyzed prior to pathogen treatment to determine Whether the sewage sludge contains viable helminth ova.

b. When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than one per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.

c. When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than one per four grams of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than one per four grams of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meet the viable helminth ova density requirement are documented.

d. After the viable helminth ova reduction in iii.c. of this subsection is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen

treatment process operating parameters are consistent with the values of ranges of values documented in (iii)(c) of this subsection.

**4.1.4. Class A - Alternative 4** (503.32(a)(6))

i. Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge shall be less than three Most Probable Number per four grams of total solids (dry weight basis) at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10 (b), §503.10(c), §503.10(f).

ii. The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), §503.10(c), §503.10(e) or §503.10(f), unless otherwise specified by the permitting authority.

iii. The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b),§503.10(c), §503.10(e) or §503.10(f), unless otherwise specified by the permitting authority.

**4.1.5. Class A - Alternative 5** (503.32(a) (8))

i. Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the sludge shall be less than three Most Probable Number per four grams of total (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), §503.10(c), §503.10(e) or §503.10(f).

ii. Sewage sludge that is used or disposed shall be treated in one of the Processes to Further Reduce Pathogens described in Section 4.3.

**4.1.6. Class A - Alternative 6** (503.32(a)(8)

i. Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number per gram of total solids (dry weight basis), or the density of Salmonella, sp. bacteria in the sewage sludge shall be less than three Most Probable number per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in §503.10(b), §503.10(c), §503.10(e) or §503.10(f).

ii. Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens, as determined by the permitting authority.

## 4.2 Class B Pathogen Reduction

**4.2.1. Class B - Alternative 1** (503.32(b)(2))

i. Seven representative samples of the sewage sludge that is used or disposed shall be collected.

ii. The geometric mean of the density of fecal coliform in the samples collected in (2) (i) of this subsection shall be less than either 2,000,000 Most Probable Number per gram of total solids (dry weight basis) or 2,000,000 Colony Forming Units per gram of total solids (dry weight basis).

**4.2.2. Class B - Alternative 2** (503.32 (b)(3))

Sewage sludge that is used or diagnosed shall be treated in one of the Processes to Significantly Reduce Pathogens described in Section 4.3.

**4.2.3. Class B - Alternative 3** (503.32(b)(4))

Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by the permitting authority.

## 4.3 Pathogen Reduction Processes

**4.3.1. Process to Significantly Reduce Pathogens**

**1. Aerobic Digestion** - Sewage sludge is agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature. Values for

the mean cell residence time and temperature shall be between 40 days at 20 degrees Celsius and 60 days at 15 degrees Celsius.

**2. Air Drying** - Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of three months. During two of the three months, the ambient average daily temperature is above zero degrees Celsius.

**3. Anaerobic Digestion** - Sewage sludge is treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35 to 55 degrees Celsius and 60 days at 20 degrees Celsius.

**4. Composting** - Using either the within vessel, static aerated pile, or window composting methods, the temperature of the sewage sludge is raised to 40 degrees Celsius or higher and remains at 40 degrees Celsius or higher for five days. For four hours during the five days, the temperature in the compost pile exceeds 55 degrees Celsius.

**5. Lime Stabilization** - Sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 after two hours of contact.

**4.3.2. Process to Further Reduce Pathogens**

**1. Composting** - Using either the within vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge is maintained at 55 degrees Celsius or higher for three days.

Using the windrow composting method, the temperature of the sewage sludge is maintained at 55 degrees or higher for 15 days or longer. During the period when the compost is maintained at 55 degrees or higher, there shall be a minimum of five turnings of the window.

**2. Heat Drying** - Sewage sludge is dried by direct or indirect contact with hot gases to reduce the moisture content of the sewage sludge to 10 percent or lower. Either the temperature of the sewage sludge particles exceeds 80 degrees Celsius or the wet bulb temperature of the gas in contact with sewage sludge as the sewage sludge leaves the dryer exceeds 80 degrees Celsius.

**3. Heat Treatment** - Liquid sewage sludge is heated to temperature of 180 degrees Celsius or higher for 30 minutes.

**4. Thermophilic Aerobic Digestion** - Liquid sewage sludge is agitated with air or oxygen to maintain aerobic conditions and the mean cell residence time of the sewage

sludge is 10 days at 55 to 60 degrees Celsius.

**5. Beta Ray Irradiation** - Sewage sludge is irradiated with beta rays from an accelerator at dosages of at least 1.0 megarad at room temperature (ca. 20 degrees Celsius).

**6. Gamma Ray Irradiation** - Sewage sludge is irradiated with gamma rays for certain isotopes, such as $^{60}$Cobalt and $^{137}$Cesium, at dosages of at least 1.0 megarad at room temperature (ca. 20 degrees Celsius).

**7. Pasteurization** - The temperature of the sewage sludge is maintained at 70 degrees Celsius or higher for 30 minutes or longer.

## 5. Vector Attraction Reduction

The various vector attraction reduction means are listed in this section. The 40 CFR Part 503 section from with each reduction was excerpted is referenced in parenthesis.

**5.1. Alternative 1** (503.33(b)(1))

The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38 percent.

**5.2. Alternative 2** (503.33(b)(2))

When the 38 percent volatile solids reduction requirement in §503.33(b)(1) cannot be met for an anaerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 degrees Celsius. When at the end of the 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.

**5.3. Alternative 3** (503.33(b)(3)

When the 38 percent volatile solids reduction requirement in §503.33(b)(1) cannot be met for an aerobically digested sewage sludge, vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 degrees Celsius. When at the end 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction reduction is achieved.

**5.4. Alternative 4** (503.33(b)(4)

The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius.

**5.5. Alternative 5** (503.33(b)(5))

Sewage sludge shall be treated in an aerobic process for 14 days or longer. During time, the temperature of the sewage sludge shall be higher than 40 degrees Celsius and the average temperature of the sewage sludge shall be higher than 45 degrees Celsius.

**5.6. Alternative 6** (503.33(b)(6))

The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then at 11.5 or higher for an additional 22 hours.

**5.7. Alternative 7** (503.33(b)(7))

The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials.

**5.8. Alternative 8** (503.33 (b)(8)

The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.

**5.9. Alternative 9** (503.33(b)(9))

i. Sewage sludge shall be injected below the surface of the land.

ii. No significant amount of the sewage sludge shall be present on the land surface within one hour after the sewage sludge is injected.

**5.10. Alternative 10** (503.33(b)(10))

i. Sewage sludge applied to the land surface or placed on an active sewage sludge unit shall be incorporated into the soil within six hours after application to or placement on the land unless otherwise specified by the permitting authority.

ii. When sewage sludge that is incorporated into the soil is Class A with respect to pathogens, the sewage sludge shall be applied to or place on the land within eight hours after being discharged from the pathogen treatment program.

**5.11. Alternative 11** (503.33(b)(11))

Sewage sludge placed on an active sewage sludge unit shall be covered with soil or other material at the end of each operating day.

# 6. CLOSURE AND POST CLOSURE PLAN

The closure and post closure plan shall describe how the sewage sludge unit will close and how it will be maintained for three years after closure.

## 6.1. Minimum Elements

The following items are the minimum elements that should be addressed in the closure plan.

### 6.1.1. General Information

a. Name, address, and telephone number of the owner/operator
b. Location of the site including size
c. Schedule for final closure

### 6.1.2. Leachate collection system

a. How the system will be operated and maintained for three years after closure
b. Treatment and disposal of the leachate

### 6.1.3. Methane Monitoring

a.. Description of the system to monitor methane within the structures at the property line
b. Maintenance of the system

### 6.1.4. Restriction of Public Access

a. Describe method of restricting public access for three years after the last surface disposal unit closes

### 6.1.5. Other Activities

a. Groundwater monitoring
b. Maintenance and inspection schedules
c. Discussion of land use after cover
d. Copy of notification to subsequent land owner

## 6.2. Notification to Land Owner

The notification to the subsequent land owner shall include the following information:

a. Name, address, and telephone number of the owner/operator of the owner/operator of the surface disposal site.

b. A map and description of the surface disposal site including locations of surface disposal units.

c. An estimate of the amount of sewage sludge placed on the site and a description of the quality of the sludge.

d. Results of the methane gas monitoring and groundwater monitoring

e. Discussion of the leachate collection system, if appropriate

f. Demonstration that the site was closed in accordance with closure plan

# 7. SAMPLING AND ANALYSIS

## 7.1 Sampling

Representatives samples of sewage sludge that is applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator shall be collected and analyzed.

## 7.2 Analytical Methods

The following methods shall be used to analyze samples of sewage sludge.

a. Enteric Viruses

ASTM Method D 499-89, "Standard Practice for Recovery of Viruses from Wastewater Sludge", Annual Book of ASTM Standards: Section 11, Water and Environmental Technology, 1992.

b. Fecal Coliform

Part 9221 E or Part 9222 D, "Standard Methods for the Examination of Water and Wastewater", 18th edition, American Public Health Association, Washington, D.C., 1992.

c. Helminth Ova

Yanko, W.A., "Occurrence of Pathogens in Distribution and Marketing Municipal Sludges", EPA 600/1-87-014, 1987. NTIS PB 88-154273/AS, National Technical Information Service, Springfield, Virginia.

d. Inorganic Pollutants

Method SW-846 in "Test Methods for Evaluating Solid Waste" U.S. Environmental Protection Agency, November 1986.

e. Salmonella sp. bacteria

Part 9260 D.1, "Standard Methods for the Examination of Water and Wastewater", 18th edition, American Public Health Association, Washington, D.C., 1992; or Kenner, B.B. and H.A. Clark, "Determination and Enumeration of Salmonella and Pseudomonas aeruginosa", J. Water Pollution Control Federation, 46 (9): 2163-2171, 1974.

f. Specific Oxygen Uptake Rate

Part 2710 B, "Standard Methods for the Examination of Water and Wastewater", 18th edition, American Public Health Association, Washington, D.C., 1992.

g. Total Solids, Fixed Solids, and Volatile Solids

Part 2540 G, Standard Methods for the Examination of Water and Wastewater", 18th edition, American Public Health Association, Washington, D.C., 1992.

## 7.3 Percent Volatile Solids Reduction

Percent volatile solids reduction shall be calculated using a procedure in "Environmental Regulations and Technology - Control of Pathogens and Vectors in Sewage Sludge", EPA 625/R-92/013, U.S. Environmental Protection Agency, Cincinnati, Ohio, 1992.

# NPDES PART II STANDARD CONDITIONS
(January, 2007)

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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.

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.

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.

(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

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

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

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.

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.

*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.

(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

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

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).

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.

*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.

*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.

*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.

*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,

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.

*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 $1 \times 10^{-7}$ 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.

*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 or 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 on 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.

*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.

*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.) |

| | |
|---|---|
| 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 |

| | |
|---|---|
| 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**
**REGION I**
**ONE CONGRESS STREET**
**BOSTON, MASSACHUSETTS 02114-2023**

# FACT SHEET

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

**NPDES PERMIT NO.:** NH0100455

**NAME AND MAILING ADDRESS OF APPLICANT:**

Town of Durham,
100 Stone Quarry Road
Durham, New Hampshire 03824

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Durham Treatment Facility
100 Piscataqua Road
Durham, New Hampshire 03824

**RECEIVING WATER:** Oyster River (Hydrologic Basin Code: 01060003)

**CLASSIFICATION:** B

## I. Proposed Action, Type of Facility and Discharge Location.

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge treated effluent into the designated receiving water. The facility is engaged in the collection and treatment of municipal and industrial wastewater. The discharge is the effluent from a 2.5 mgd secondary wastewater treatment facility with dechlorination. Sludge from the facility is sent off-site for ultimate disposal.

The Town's previous permit was issued on September 28, 1990 and it became effective on December 28, 1993 following resolution of the permit appeal. This permit expired on December 28, 1998. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a complete application for permit reissuance within the prescribed time period as per 40 Code of Federal Regulations (CFR) §122.6.

The location of facility, Outfall 001, and receiving water are shown in Attachment A.

## II. Description of Discharge.

A quantitative description of significant effluent parameters based on reapplication data and discharge monitoring data (April 1997 through March 1999) are shown in Attachment B.

## III. Limitations and Conditions.

Effluent limitations, and monitoring requirements are found in PART I of the draft NPDES permit.

**IV. Permit Basis and Explanation of Effluent Limitations Derivation.**

**A. Background**

The Clean Water Act (ACT) 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 ACT. 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 ACT and any applicable State Regulations. The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

EPA is required to consider technology and water-quality based criteria in addition to the existing permit conditions when developing permit limits. Technology-based treatment requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the ACT. Technology guidelines (effluent limitations and compliance deadlines) for discharges other than Publicly Owned Treatment Works (POTWs) are found at 40 CFR §§ 400-471, Subchapter N. Secondary treatment technology guidelines (effluent limitations) for POTWs are found in 40 CFR §133.

In general, all statutory deadlines for meeting various treatment technology-based guidelines (effluent limitations) established pursuant to the ACT have expired. For instance, compliance with POTW technology-based effluent limitations is, effectively, from date of permit issuance (40 CFR §125.3(a)(1)). Those for non-POTW technology-based effluent limitations must be 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 (40 CFR §125.3(a)(2)). Compliance schedules and deadlines not in accordance with the statutory provisions of the ACT can not be authorized by a NPDES permit.

EPA regulations require NPDES permits to 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. See Section 301(b)(1)(C) of the ACT. A water-quality standard consists of three elements: (1) beneficial designated use or uses for a waterbody or a segment of a waterbody; (2) numeric or narrative water-quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirement to ensure that once a use is attained it will not be eroded. Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water-quality standards to develop permit limits both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable instream pollutant concentration, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 CFR 122.44(d)(1) and are implemented under 40 CFR §122.45(d).

**B. Introduction**

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water-quality criterion. An excursion occurs if the projected or actual in-stream concentration exceeds the applicable 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 permit's reissuance application, Monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-001, pages 47-66; and, where appropriate, (5) dilution of

the effluent in the receiving water. In accordance with State regulations [RSA 485-A:8, VI, PART Env-Ws 430.25 and 430.26], the available dilution in tidal waters is the low flow condition that is exceeded 99 percent of the time at outfall location.

The permit may not be renewed, reissued or modified with less stringent limitations or conditions than those in the previous permit unless in compliance with the antibacksliding requirement of the ACT according to Sections 402(o) and 303(d)(4) and with the provisions in 40 CFR §122.44(l)(1,2). EPA's antibacksliding provisions found in 40 CFR §122.44(1) prohibit the relaxation of permit limits, standards, and conditions unless certain requirements are met. Therefore, unless these requirements are met the limits in the reissued permit must be at least as stringent as those in the existing permit.

The Act further requires that EPA obtain a state certification which provides that all water-quality standards will be satisfied by the permit. The permit must conform to the conditions established pursuant to a State Certification under Section 401 of the ACT (40 CFR §124.53 and §124.55). EPA regulations pertaining to permit limits based upon water-quality standards and state requirements are contained in 40 CFR §122.44(d).

The conditions of the permit reflect the goal of the Clean Water Act and EPA to achieve and then to maintain the chemical, physical, and biological integrity of the Nation's waters. To protect the existing quality of the State's receiving waters, the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) adopted Antidegradation requirements in their September 30, 1996, Surface Water Quality Regulations (Env-Ws 430.31 through 430.45). Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

The Oyster River is classified as a Class B waterway by the NHDES-WD. Class B waters shall be of the second highest quality, shall have no objectionable physical characteristics, and shall contain a dissolved oxygen content of at least 75 percent saturation. Designated uses are for the protection and propagation of aquatic life and wildlife, and for swimming and other recreational purposes, and after treatment for water supplies.

**C. Effluent Limitations for Conventional Pollutants**

Effluent limitations in the draft permit for the average monthly, average weekly and maximum daily Five-day Biochemical Oxygen Demand ($BOD_5$) and Total Suspended Solids (TSS) concentrations and for the corresponding average monthly and maximum daily allowable loads for both constituents are based upon limits in the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44. In addition, the average monthly and weekly concentration-based limitations for $BOD_5$ and TSS are based on requirements under Section 301(b)(1)(B) of the ACT as defined in 40 CFR §133.102. The permittee has been able to achieve consistent compliance with these limitations for the past two years. The State's revised Surface Water Quality Regulations (Adopted Rule 96-080 September 30, 1996) also require these concentrations in permits as well as mass loadings for all limited corresponding $BOD_5$ and TSS concentrations (See Section Env-Ws 430.47 and 430.48). Accordingly, Maximum Daily allowable load limits have been added to this draft permit for both those constituent concentrations. See Attachment C for the equation to calculation the mass-based limits.

The pH limits in the draft permit remain unchanged from the existing permit, however, language has been added to the State Permit Conditions (PART I.D.1.a.) allowing for a change in pH limit(s) under certain conditions. A change would be considered if the permittee can demonstrate to the satisfaction of NHDES-WD that the in-stream pH standard will be protected when the permittee's discharge is outside the permitted range of 6.5 to 8.0 Standard Units (S.U.), then the permittee or NHDES-WD may request in writing that the pH permit limit(s) be modified by EPA to incorporate the results of the demonstration. Anticipating the situation where the NHDES-WD grants a formal approval changing the pH limit(s), EPA has added a provision to this draft permit (See SPECIAL CONDITIONS section). That provision will allow EPA to modify the pH limit(s) using a certified letter. This change will be allowed as long as it can be demonstrated that the revised pH limit range does not alter the naturally occurring receiving water pH as provided by Part I.D.1.a. in the permit. However, the pH limit range cannot be less restrictive than the limits of 6.0 to 9.0 S.U.

found in the Secondary Treatment Regulations in 40 CFR §133.102.

If the State approves the results from a pH demonstration study, this permit's pH limit range can be relaxed in accordance with 40 CFR § 122.44(l)(2)(i)(B) because it will be based on new information not available at the time of this permit's issuance. This new information includes results from the pH demonstration study that justifies the application of a less stringent effluent limitation. EPA anticipates that the limit determined from the demonstration study as approved by the NHDES-WD will satisfy all effluent requirements for this discharge category and will comply with New Hampshire's Surface Water Quality Regulations amended on September 30, 1996.

The limitations for pH and Total Coliform bacteria are based upon limitations in the existing permit in accordance with the antibacksliding requirements found in 40 CFR §122.44(1) since the permittee has been able to achieve consistent compliance with all these limitations. The original basis for these limitations is found in New Hampshire's State statutes (N.H. RSA 485-A:8). Historically, the NHDES-WD has required bacteria and pH limits to be satisfied at end-of-pipe with no allowance for dilution. Therefore, in addition to the antibacksliding requirement, these limitations are based on State certification requirements for POTWs under section 401(d) of the CWA, 40 CFR §§124.53 and 124.55.

**D. Nonconventional and Toxic Pollutants**

Water quality based limits for specific toxic pollutants such as chlorine, ammonia, etc. are determined from numeric chemical specific criteria derived from extensive scientific studies. The specific toxic pollutants and their associated toxicity criteria are popularly know as the federal "Gold Book" criteria which EPA summarized and published in Quality Criteria for Water, 1986, EPA 440/5-86-001, as amended. Each criteria consists of two values--an acute aquatic-life criteria to protect against short-term effects, such as death, and a chronic aquatic-life criteria to protect against long-term effects, such as poor reproduction or impaired growth. New Hampshire adopted these "Gold Book" criteria, with certain exceptions and included them as part of the NH Standards. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit.

Available Dilution

The Durham facility discharges to the Oyster River, within the estuarine portion of the River, about 1.6 miles above the River's mouth in the Little Bay portion of Great Bay. The available dilution (also referred to as dilution factor) in the receiving water was determined by EPA to be 1.7 to 1 based upon the CORMIX modeling analysis. The detailed modeling analysis was completed in 1993 during the resolution of the Town's appeal to the permit issued in 1990. The water quality based limits in this draft permit are established using the dilution factor of 1.7:1 as expressed in EPA's letter dated December 16, 1993 agreement settling the appeal. EPA has determined this factor, which was derived as discussed below, is pertinent to Durham's discharge.

The critical nearfield dilution of 1.7:1 was computed at the treatment plant's outfall during design conditions in the Oyster River Estuary. EPA determined the critical design condition is a combination of low-water slack at spring tide (in the estuary) and the 7Q10 low flow (Oyster River inflow). The selection criteria for these design conditions are given in the report "Technical Support Document for Water Quality-based Toxics Control" (referenced above). The selected critical period provides a dilution factor consistent with the NH Standards which indicate the low flow condition for tidal waters is the flow exceeded 99 percent of the time.

This dilution factor (1.7:1) was obtained from application of the CORMIX Model using the available riverine and estuarine data. Site specific data were obtained from the report " The Hydrography of the Oyster River Estuary " by G. R. Shanley (1972) and in the facilities construction plans (dated May 1977). The Oyster River's 7Q10 low flow was calculated from the streamflow records for the gaging station near Durham and extrapolated to reflect the drainage area at the outfall.

Total Residual Chlorine

The Total Residual Chlorine (TRC) average monthly and maximum daily limitations are based on the chronic and acute aquatic-life criteria, respectively, found in the NH Standards and using the available dilution of the receiving water as mentioned above. The TRC's chronic criterion is 0.0075 mg/L, whereas, the acute criterion is 0.013 mg/L. Recently, EPA - New England changed its chlorine policy to no longer allow the chronic derived value to be shown as a "maximum daily" limit as in the existing permit, but instead it is an appropriate "average monthly" limit. Consequently, in this draft permit, the chronic derived value of 0.013 mg/L is established as a new "average monthly" limit, and the acute derived value of 0.022 mg/L, is the revised "maximum daily" limit.

The proposed Average Monthly and Maximum Daily limits for TRC of 0.013 mg/L and 0.022 mg/L are below the analytical detection limit for this pollutant. In these situations, EPA Region I is following guidance set forth in the previously cited report "Technical Support Document for Water Quality-Based Toxics Control" which recommends "... that the compliance level be defined in the permit as the minimum level (ML)." The minimum level of detection for TRC established by the EPA Region I Quality Assurance Office in a memorandum dated April 30, 1992 is 0.050 mg/L. Therefore, the limit at which compliance determinations will be based is the ML. For this permit, the ML for TRC is defined as 0.050 mg/l as in the case of the existing permit. This value may be reduced by permit modification as more sensitive test methods are approved by EPA and the State.

The appropriate TRC analytical detection methods are included in the draft permit along with a revision to the additional method requested by the permittee during the term of the exiting permit. This revised method was deemed an acceptable version to spectrophotometric method by EPA on February 26, 1997.

Metals

The metals data available from the recent whole effluent toxicity (WET) test reports are summarized in Attachment B. These data were used to determine the "reasonable potential", as previously mentioned, to exceed the applicable water quality criterion which is the dissolved metal in the NH Standards. Since the regulations at 40 CFR §122.45(c) require permit limits expressed as the total recoverable metal a translator is utilized to calculate the total recoverable permit limit from the dissolved criterion. With the information available, EPA has determined the default translator equal to the conversion factor in the NH Standards - Table 430.2 is appropriate to calculate the permit limits. This method is consistent with recommendations in The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit From A Dissolved Criterion, June 1996, EPA 823-B-96-007, Section 1.5. The equation to calculate the average monthly and maximum daily total recoverable permit limits with the dissolved chronic and acute marine water quality criteria in the NH Standards is shown in Attachment C.

The Total Copper concentration in the plant's effluent differs by an insignificant amount from the calculated permit limits and the low values are questionable because clean sampling techniques for metals are not required as part of the WET tests. Therefore, EPA is unable to determine if Copper was detected at total recoverable concentrations that would cause reasonable potential to exceed the New Hampshire dissolved water quality criteria. EPA has determined additional Copper data based upon "clean techniques" are required to evaluate "reasonable potential for Total Copper effluent limitations. The reporting requirements are discussed below.

Because one Zinc sample exceeded the permit limits calculated as mentioned above, EPA has determined additional Total Zinc data are required to allow a "reasonable potential" decision similar to that required for Copper. This Draft Permit proposes Average Monthly and Maximum Daily reporting requirements for Total Copper and Total Zinc using clean sampling techniques and specific analytical methods with a minimum level of detection.

The required "clean techniques" methodology is EPA Method 1669: Sampling Ambient Water for Trace Metals At EPA Water Quality Criteria Levels EPA 821-R-954-034, April 1995. This methodology is also being required for the metals analyzed during the WET testing. The analytical method for Total Recoverable Copper and Zinc is the Furnace AA

method with a ML of detection at 0.0025 mg/L for both metals. This value may be reduced by permit modification as more sensitive test methods are approved by EPA and the State.

Ammonia

EPA regulations at 40 CFR 122.44(d) require effluent limits for any pollutant that has the reasonable potential to violate the numeric criteria. This Draft Permit proposes Average Monthly and Maximum Daily limitations for Ammonia because reasonable potential exists, since the numeric marine criteria, which are defined below, for this pollutant were exceeded by the available chemical data. These data were obtained from the WET Toxicity reports (see Attachment B).

Ammonia nitrogen (ammonia) measured in the effluent during the WET tests was at concentrations that would cause reasonable potential to violate New Hampshire narrative water quality criteria for toxicity found in Env-Ws 430.50. Since, for ammonia toxicity, the State has neither adopted or developed a specific numeric criteria nor implemented a whole effluent toxicity approach in lieu of specific numeric criteria to protect its narrative water quality criteria, EPA, using Best Professional Judgement, has made a determination that the application of its Federal Saltwater Ammonia Criteria (Gold Book) represents the best scientific information currently available to protect sensitive aquatic species in the marine environment from the toxic effects of ammonia. This Federal criteria is a specific numeric criteria that is being used to ensure that the State's narrative water quality criteria is sufficiently protective. Accordingly, the Federal criteria saltwater ammonia criteria has been used to first "assess reasonable" for the State's narrative water-quality criteria for toxicity and then based on that assessment to develop permit limits.

The marine ammonia criteria are a function of temperature, pH, and salinity and the values of 20° C, 8.0 S.U., and 28 parts per thousand were used, respectively. The ambient temperature and salinity data were obtained from the results of a recent sampling of the Oyster River by the NHDES-WD in September 1998 near the plant's outfall. A pH value of 8.0 was used which is consistent with the State's standard for this receiving water. The marine ambient water quality criteria for Ammonia are defined in the EPA document: EPA 440/5-88-04, April 1989. The resulting acute and chronic ammonia criteria using this document are 7.18 and 1.08 mg/L, respectively. The ammonia limits calculated using the equation in Attachment C are expressed as Ammonia Nitrogen as N for consistency with the laboratory results.

**E. Whole Effluent Toxicity**

The Region's current policy is to require toxicity testing in all municipal permits with the type of whole effluent toxicity (WET) test (acute and/or chronic and effluent limitations (LC50 and/or C-NOEC) based on available dilution (See Attachment D). New Hampshire's State law N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Ws 430.50(a) states that, "all classes of waters shall be free from toxic pollutants or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;". The federal NPDES permit regulations at 40 CFR § 122.44(d)(1)(v) require WET limits in a permit when a discharge has a "reasonable potential" to cause of contribute to an excursion above the State's narrative criterion for toxicity. Accordingly, effluent limitations for WET toxicity are continued in the draft permit and are based upon limitations in the existing permit in accordance with antibacksliding requirements found in 40 CFR §122.44(l).

Results of these toxicity tests will demonstrate compliance with the no toxic provision of the NH Standards. Therefore, this draft permit continues the requirement in the existing permit to perform four acute and chronic toxicity tests each year with three species.

This draft permit is conditioned to require the permittee to perform annually, four acute and chronic toxicity tests on effluent samples using three (3) species and the permit continues an LC50 limit of greater than or equal to 100 % effluent concentration and revises the C-NOEC limit to $\geq$ 58.8 % effluent concentration. The four acute toxicity tests are performed using two test species, Mysid Shrimp (Mysidopsis bahia) and Inland Silverside (Menidia beryllina); and the four chronic toxicity tests are performed using two species, Sea Urchin (Arbacia punctulata), and Inland Silverside

(Menidia beryllina). The chronic test for the Inland Silverside is used to calculate the acute LC50 at the 48 hour exposure. The specie Arbacia punctulata replaces Cyprinodon variegatus specified in the existing permit. LC50 is defined as the concentration of toxicant, or in this draft permit as percentage of effluent, that would be lethal to 50 % of the test organisms during a specific time period. The C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration effluent to which organisms are exposed in a life cycle or partial life cycle test, which causes no adverse effect on growth, survival or reproduction where the test results (growth, survival and/or reproduction) exhibit a linear dose-response relationship. In those instances where these test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect.

If the results of these tests are consistently negative during the four most recent sampling events, the monitoring frequency and testing requirements may be reduced as discussed below. Alternatively, if toxicity is found again, monitoring frequency and testing requirements may be increased.

Subsequent to the reissuance of the existing permit, EPA-New England changed its regional policy regarding toxicity sample collection from any day in a particular month within a calendar quarter to any day in a particular calendar quarter as in this draft permit. This was done to alleviate the workload fluctuation at private laboratories and to give the permittee additional sampling flexibility to accommodate such things as high flows or frozen conditions in the receiving water.

Therefore, the quarterly samplings for the WET test requirement shall be collected and tests completed during the calendar quarters ending March 31st, June 30th, September 30th, and December 31st of each year. Results are to be submitted to EPA and the NHDES-WD by the 15th day of the month following the end of the quarter sampled. For example, test results for the quarter beginning on April 1st and ending on June 30th, are due by July 15th.

As a special condition of this draft permit (See applicable paragraph under SPECIAL CONDITIONS section), the frequency of testing may be reduced by a certified letter from EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After completion of a minimum of four consecutive WET tests, all of which must be valid tests and must demonstrate compliance with the permitted limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of the toxicity test results. The EPA will review the test results and other pertinent information to make a determination. The frequency of toxicity testing may be reduced to as little as once per year. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

This draft permit requires reporting of selected metals determined from the chemical analysis of the WET tests sample with 100 % effluent. Specifically, Cadmium, Chromium, Lead, and Nickel are to be reported on the appropriate Discharge Monitoring Report (DMR) for entry into EPA's Permit Compliance System's Data Base. EPA - New England does not consider these reporting requirements an unnecessary burden as reporting these constituents is required with the submission of each toxicity testing report. (For example see Draft Permit, Attachment A, page A-5.) As mentioned above the "clean techniques" sampling methodology for these metals is specified.

**F. Sludge**

Section 405(d) of the ACT requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993 and became effective on March 22, 1993. Domestic sludges which are land applied; disposed of in a surface disposal unit; or fired in a sewage sludge incinerator are subject to Part 503 technical standards. Part 503 regulations have a self implementing provision, however, the ACT requires implementation through permits. Domestic sludges which are disposed of in municipal solid waste landfills are in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258.

The draft permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. In addition, EPA-New England has included with the draft permit a 48 page sludge compliance guidance document for use by the permittee in determining their appropriate sludge conditions for their chosen method of sludge disposal.

The permittee is also required to submit to EPA and to NHDES-WD annually, on February 19th, the various sludge reporting requirements as specified in the guidance document for the chosen method of sludge disposal.

Sludge from the Durham facility is sent off site to the Merrimack, NH Wastewater Treatment Facility for composting. Annual sludge production is 269.8 dry metric tons per year.

**G. Industrial Users**

The permittee is presently not required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR §403 and Section 307 of the Act. However, the draft permit contains conditions that are necessary to allow EPA and NHDES-WD to ensure that pollutants from industrial users will not pass through the facility and cause water quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility.

The permittee is required to notify EPA and NHDES-WD whenever a process wastewater discharge to the facility from a primary industrial category (see 40 CFR §122 Appendix A for list) is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: 1) report to EPA and NHDES-WD the name(s) of all Industrial Users subject to Categorical Pretreatment Standards under 40 CFR §403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended) who commence discharge to the POTW after the effective date of the finally issued permit, and 2) submit to EPA and NHDES-WD copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users.

**H. Additional Requirements and Conditions**

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR § 122.41(j), 122.44(I) and 122.48. Compliance monitoring frequencies for Flow, $BOD_5$, TSS, pH, TRC, Ammonia, Copper, Zinc, and Total Coliform have been established in accordance with the EPA/NHDES-WD Effluent Monitoring Guidance mutually agreed upon and first implemented in March 1993 and revised on July 19, 1999. WET test monitoring requirements have been set according to EPA-New England's Municipal Toxicity Policy. It's the intent of EPA and NHDES-WD to establish minimum monitoring frequencies in all NPDES permits at permit modification and/or reissuances in accordance with this Effluent Monitoring Guidance.

The permittee will note the sampling frequencies for certain parameters in the draft permit are revised from those in the existing permit in order to bring the monitoring requirements into conformance with this Monitoring Guidance. Thus, the sampling for $BOD_5$ and TSS decreases to 2/Week, sampling for Total Coliform increases to Daily, and sampling for TRC increases to 2/Day.

The remaining conditions of the permit are based on the NPDES regulations 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

**V. Antidegradation.**

The draft permit is being reissued with allowable wasteloads for $BOD_5$ and TSS identical to those in the existing permit This permit includes the same parameter coverage as in the existing permit and includes new maximum daily mass limits

for both constituents and adds new Ammonia limits. Therefore, EPA expects the State of New Hampshire to indicate that there will be no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted.

**VI. 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 NMFS if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" 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 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

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

The following managed species are believed to be present during at least one life stage within EFH Area 1 (Volume I), which encompasses the existing discharge site.

winter flounder (*Pleuronectes americanus*)

Based on the permit requirements identified in this Fact Sheet that are designed to be protective of all marine species, EPA has determined that a formal EFH consultation with NMFS is not required because the proposed discharge will not adversely effect EFH. However, if adverse effects to EFH do occur as a result of this permit action, NMFS will be notified and consultation will be promptly initiated.

**VII. State Certification Requirements.**

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate State Water Quality Standards or waives its right to certify as set forth in 40 CFR §124.53.

Upon public noticing of the draft permit, EPA is formally requesting that the State's certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The NHDES-WD, Wastewater Engineering Bureau is the certifying authority. EPA has discussed this draft permit with the Staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act, Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Failure to provide this statement for any condition waives the right to certify or object to any less stringent condition which may be established by EPA during the permit issuance process. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite

the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition.

**The sludge conditions implementing section 405(d) of the CWA are not subject to the 401 certification requirements.**

Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 CFR Part 124.

**VIII. Comment Period, Hearing Requests, and Procedures for Final Decisions.**

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: Mr. Carl R. DeLoi, Manager, New Hampshire State Program Unit, U.S. Environmental Protection Agency, 1 Congress Street, Suite 1100 (CNH), Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issue proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In regarding a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston Office.

Following the close of the comments 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 of 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 request for a formal hearing to reconsider or contest the final decision. Requests for formal hearing must satisfy the requirement of 40 CFR §124.74.

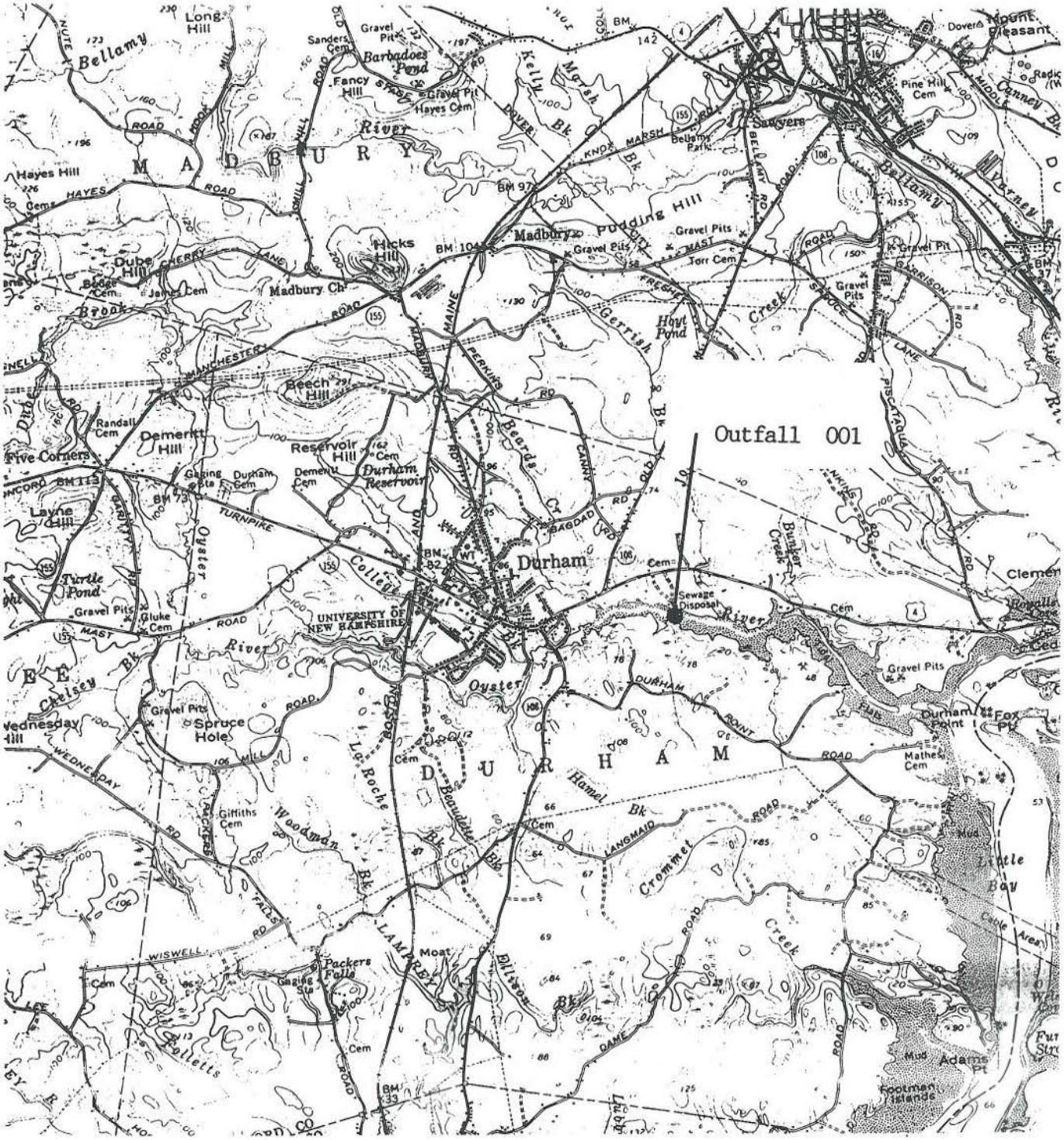
**IX. EPA Contact.**

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

**Mr. William Wandle**
**U.S. Environmental Protection Agency**
**1 Congress Street, Suite 1100 (CVT)**
**Boston, Massachusetts 02114-2023**
**Telephone: (617) 918-1605**
**FAX No.: (617) 918-1505**

09/09/99
**Date**

**Linda M. Murphy, Director**
**Office of Ecosystem Protection**
**U.S. Environmental Protection Agency**




Location of the Durham, NH Wastewater Treatment Facility.

CONCENTRATIONS OF EFFLUENT CHARACTERISTICS AT OUTFALL 001

The following effluent characteristics were derived from analysis of discharge-monitoring data collected from Outfall 001 during the 24-month period, April 1997 through March 1999. All these data were extracted from the monthly Discharge Monitoring Reports as retrieved from EPA's Permit Compliance System (PCS) data base and the New Hampshire Wastewater Treatment Facility Monthly Operations Reports submitted by the Durham Wastewater Treatment Plant. These effluent values characterize treated sanitary and industrial wastewaters discharged from this facility.

| Effluent Characteristic | Average of Average Monthly | Maximum of Maximum Daily[1] |
|---|---|---|
| Flow (MGD) | 1.13 | 4.35, 3.57, 3.48 |
| pH Range (Standard Units) | 6.5 to 7.4[2] | |
| Total Coliform (Colonies/100 ml) | 23.3 | 470, 65,65 |
| Total Chlorine Residual (mg/L) | -- | <0.05, <0.05, <0.05 |
| TSS (lbs/day) | 103 | -- |
| TSS (mg/L) | 9.8 | 45,26, 25 |
| TSS (Percent Removal) | 96.5 | 92.7, 93.1, 94.7[3] |
| $BOD_5$ (lbs/day) | 86.2 | -- |
| $BOD_5$ (mg/L) | 8.46 | 28, 26, 26 |
| $BOD_5$ (Percent Removal) | 95.1 | 91, 93.5, 93.7,[3] |
| Whole Effluent Toxicity (LC50, Percent Effluent) | | |
| Mysidopsis bahia [4] | -- | >100, 100, >100, >100 |
| Menidia beryllina [4] | -- | >100, 100, >100, >100 |
| Cyprinodon variegatus [4] | -- | 100, 90, 100, <6.25 |
| Total Copper [5](mg/L) | 0.010 | 0.005 to 0.011 |
| Total Zinc [5] (mg/L) | 0.066 | 0.019 to 0.37 |
| Total Lead [5] (mg/L) | -- | <0.003 |
| Total Nickel [5] (mg/L) | -- | <0.003, to <0.008 |
| Ammonia [5] (mg/L as N) | 7.60 | <0.10 to 23.7 |

1. More than one number represents the second and third highest values, except for pH.
2. Numbers listed are minimum and maximum daily readings.
3. Minimums of the Average Monthly values.
4. Results from the four WET tests from April 1998 to January 1999.
5. Chemical data from the 11 WET tests from Dec. 1996 to June 1999 with the average and range of these values shown. All the reported Ammonia data are included.

## CALCULATIONS OF MASS-BASED LIMITS

Calculation of maximum allowable loads for $BOD_5$ and TSS are based on the following equation.

$$L = C \times Q_{PDF} \times 8.345$$

where: L = Maximum allowable load, in lbs/day, rounded to nearest 1 lbs/day,
C = Maximum allowable effluent concentration for average monthly reporting period, in mg/L,
$Q_{PDF}$ = Treatment plant's design flow, in MGD, and
8.345 = Factor to convert effluent concentration, in mg/L, and plant's design flow, in MGD, to lbs/day.

Maximum Daily BOD Mass Limit = 50 mg/L X 2.5 mgd x 8.345 = 1,043 lbs/day

## WATER QUALITY CRITERIA BASED EFFLUENT LIMITS

Equation used to calculate average monthly and maximum daily limits.

Effluent Limit = [Dilution Factor ] X (Water-Quality Criterion)

Total Residual Chlorine

| | | | | |
|---|---|---|---|---|
| Average Monthly Limit | = | [1.7 ] X | 0.0075mg/L = | 0.013 mg/L |
| Maximum Daily Limit | = | [1.7] X | 0.013 mg/L = | 0.022 mg/L |

Total Ammonia (Multiply these values by 0.822 to obtain the limits in terms of Ammonia Nitrogen as N)

| | | | | |
|---|---|---|---|---|
| Average Monthly Limit | = | [1.7 ] X | 1.08 mg/L = | 1.84 mg/L |
| Maximum Daily Limit | = | [1.7] X | 7.18 mg/L = | 12.21 mg/L |

Metals

Equation used to calculate average monthly and maximum daily Metal limits. EPA has determined additional Copper and Zinc data are required to evaluate the need for Copper and Zinc limits as discussed in the Metals section of this Fact Sheet.

$$\text{Effluent Limit as Total Recoverable Metal} = [\text{Dilution Factor}] \times \frac{\text{(Water-Quality Criterion)}}{\text{Conversion Factor}}$$

where: Conversion factor is 0.83 to convert Total Recoverable Copper to Dissolved Copper and is 0.946 to convert Total Recoverable Zinc to Dissolved Zinc for marine waters.

| | | | | |
|---|---|---|---|---|
| Average Monthly Total Recoverable Copper Limit | = | [1.7 ] X | $\frac{0.0031}{0.83}$ mg/L = | 0.006 mg/L |
| Maximum Daily Total Recoverable Copper Limit | = | [1.7] X | $\frac{0.0048}{0.83}$ mg/L = | 0.010 mg/L |

The Average Monthly and Maximum Daily Total Recoverable Zinc Limits are 0.15 and 0.16 mg/L, respectively.

**ATTACHMENT D** **NH0100455**

Toxicity Strategy for Municipal Permits

| | HIGH RISK | MED-HIGH RISK | MED-LOW RISK | LOW RISK |
|---|---|---|---|---|
| DILUTION FACTOR | <10:1 | 10.1-20:1 | 20.1-100:1 | >100:1 |
| SAMPLING EVENTS PER YEAR | 4(1/3 MONTHS) | 4(1/3 MONTHS) | 4(1/3 MONTHS) | 2(1/6 MONTHS) |
| TOXICITY TESTS:<br>FRESH WATER<br>MARINE WATER | <br>CHRONIC[1]<br>CHRONIC & ACUTE | <br>CHRONIC[1]<br>CHRONIC & ACUTE | <br>ACUTE<br>ACUTE | <br>ACUTE<br>ACUTE |
| NUMBER OF SPECIES:<br>FRESH WATER<br>MARINE WATER | <br>2<br>3 | <br>2<br>3 | <br>2<br>2 | <br>2<br>2 |
| PERMIT LIMITS | LC50=100%<br>C-NOEC[2]>=RWC[3] | LC50=100% | LC50=100% | LC50>=50% |
| TEST SPECIES:<br>FRESH WATER<br><br><br>MARINE WATER | <br>DAPHNID[1] (*Ceriodaphnia dubia* or *Daphnia pulex*)<br>FATHEAD MINNOW[1] (*Pimephales promelas*)<br><br>INLAND SILVERSIDE[1] (*Menidia beryllina*)<br>MYSID SHRIMP (*Mysidopsis bahia*)<br>SEA URCHIN (*Arbacia punctulata*) | | <br>DAPHNID (*Ceriodaphnia dubia* or *Daphnia pulex*)<br>FATHEAD MINNOW (*Pimephales promelas*)<br><br>INLAND SILVERSIDE (*Menidia beryllina*)<br>MYSID SHRIMP (*Mysidopsis bahia*) | |

[1] 7-DAY CHRONIC/MODIFIED ACUTE.

[2] C-NOEC IS CHRONIC NO OBSERVED EFFECT CONCENTRATION.

[3] RWC IS RECEIVING WATER CONCENTRATION, IN PERCENT, AS DETERMINED FROM DIVIDING ONE BY THE DILUTION FACTOR ALL TIMES 100.

**RESPONSE TO COMMENTS**
**REISSUANCE OF NPDES PERMIT NO. NH0100445**
**TOWN OF DURHAM, NEW HAMPSHIRE**

The U.S. Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) solicited public comments from October 1, 1999, through October 30, 1999, on the draft National Pollutant Discharge Elimination System (NPDES) permit to be reissued to the Town of Durham. This permit is for the discharge of treated wastewater from a Publicly Owned Treatment Works to the Oyster River.

During the public comment period, the Town of Durham and a member of the public submitted comments on the Draft Permit. Following is a response to these comments, including identification and explanation of those provisions of the Draft Permit which have changed in the Final Permit.

These responses and associated comments are complimentary to the Fact Sheet and Draft Permit. The Fact Sheet was prepared to support the Draft Permit. The "Response To Comments" is a response to each significant written comment received by EPA. The reader will need to be familiar with the Draft Permit and Fact Sheet, the applicable federal NPDES permit regulations and the State of New Hampshire's Water Quality Statutes and Administrative Rules to understand the responses and associated comments.

The original comments form a part of the NPDES Permit file and are summarized and condensed in this document.

**COMMENT NO. 1:**
The Town requests at least a six month delay in the issuance of the final permit to provide sufficient time so that our requests for more information and permit revisions (see the Town's specific comments below) can be considered. This additional time will also allow completion of the wastewater facility plan, to gather input and direction from our customers and Durham's governing body, to consider the responses from EPA and NHDES to our requests to modify the draft NPDES Permit, and to determine the short and long term implications of complying with the new permit. Twenty five days to identify the far reaching implications and assess the impacts of the changes in the draft permit limitations from those in the existing permit was not adequate.

**RESPONSE NO. 1:**
EPA prepared the draft permit to reflect the Town's existing wastewater treatment facility, which includes the existing outfall site based upon the EPA's determination in June 1998 of a complete reapplication for Durham's NPDES permit. While EPA is supportive of the facility planning process and the investigations of alternative outfall locations, EPA's policy requires the reissuance of an expired permit as soon as possible to incorporate all updated regulations and policies, to insure the designated uses of the receiving water are protected, and to avoid a program backlog. The Great Bay region which encompasses the Oyster River is an important natural resource area that received the following three significant designations: 1) "Estuary of national significance" designation in 1996 by the EPA National Estuary Program, 2) National Estuarine Research Reserve

selection by NOAA, and 3) key habitats for resource protection in New Hampshire identification by EPA-New England. These designations further emphasize the need for EPA to promptly reissue Durham's permit and the other expired NPDES permits in the Great Bay region.

It should be noted at the time of the agreement between Durham and EPA to resolve Durham's NPDES permit appeal of the 1990 permit, EPA informed the Town on December 16, 1993 of its intent to reissue the next permit using a dilution factor of 1.7:1 unless future information indicates a different factor is applicable. EPA did not receive information indicating a different dilution factor is applicable to the present outfall location. Durham has been proceeding as described in its comment letter but did not begin these tasks until 1998.

EPA agrees with the Town's intent to obtain input and direction from their customers and governing body on the facility planning process and on the various wastewater treatment options. However, it is not necessary for these tasks to precede the final permit issuance because EPA regulations allow the permittee to determine the treatment process to achieve the effluent limits as mentioned below in Response No. 3. The determination of the short and long term implications of complying with the new permit can proceed after the final permit issuance.

Since EPA is proceeding with a final permit decision, this Response to Comments document provides EPA responses to Durham's "permit modification" requests. As indicated in this document, the Final Permit was revised to address several of Durham's comments. The final permit is effective 45 days, rather than standard 30 days, following the date of signature to assist in permit processing at the end of the calendar year.

Although the Town chose to utilize 25 days to submit their written comments, the Public Comment period on the draft NPDES permit is 30 days in accordance with EPA regulations.

**COMMENT NO. 2:**
Durham also needs additional time to a review the NHDES dilution modeling results including an approval by EPA. After this and the preceding comment are addressed, the Town should be in a position to fully evaluate the selected alternatives and to be in a position to request issuance of a final NPDES permit that will address the water quality issues in an affordable and reasonable manner.

**RESPONSE NO. 2:**
EPA accepts the results of the NHDES dilution modeling study for cross sections 2 and 3 in the Oyster River as summarized in their letter dated September 25, 1999; thus, an approval by EPA is not needed based on the information available at this time. EPA did not include effluent limitations for an alternate outfall location because the Town needs to determine the outfall improvements necessary and to compete the final design plans and associated permits. A reopener clause was added to the final permit in Part I.F for a permit modification when the outfall improvement/relocation project is ready to proceed following a written request from the permittee.

Although EPA is proceeding with the issuance of the final NPDES permit, the Town will have the opportunity to evaluate the various options as outlined in the above response. The requirements

in the final permit will enable the EPA, the State, and the Town to adequately address the water quality issues in the Oyster River. EPA has worked with the State and other communities with a facility that discharges to a low dilution receiving water and with stringent water quality based limitations as new permit requirements to develop a reasonable schedule allowing the Town to investigate and evaluate options to achieve compliance.

**COMMENT NO. 3:**
Since the proposed ammonia limit has the potential for an extremely expensive plant upgrade and increased operational costs, the Town needs the additional time to further identify the impacts, and to determine any other appropriate POTW modifications that may be required.

**RESPONSE NO. 3:**
EPA replaced the ammonia limitations with reporting requirements in the final permit according to the explanation in Response No. 5. The effluent monitoring requirements for ammonia will provide the necessary data to determine if Durham's discharge violates the State's water quality standards for ammonia limits. Refer to the discussion in this Response for additional information.

The NPDES Permit establishes limitations and conditions that need to be satisfied. The permit cannot dictate the method by which the permittee achieves compliance with the terms in the permit. EPA's regulations allow the permittee to determine the level of control or treatment necessary to achieve the level of pollutants authorized by the NPDES permit. Thus, a specific reopener clause relative to the final treatment plant modification is not required.

**COMMENT NO. 4:**
The ammonia limitations in the draft permit are based on measured temperature and salinity data for the Oyster River while the pH value of 8.0 is based on the Class B standard for this marine receiving water. The permittee requests that the acute and chronic ammonia criteria are determined using the measured pH values for the Oyster River rather that the assumed pH value of 8.0 since the ammonia criteria are extremely sensitive to the pH value. The attached summary table of the pH data from the whole effluent toxicity reports indicates the average pH is less than 7.3 for the past 24 months. The EPA water quality criteria tables for ammonia toxicity in saltwater are also attached.

**RESPONSE NO. 4:**
Because the ammonia limits in the final permit were replaced with reporting requirements no further response is necessary. However, to clarify the record and to provide the permittee with additional details on the development of the ammonia limits the following information is provided.

As mentioned in the Fact Sheet, the Oyster River is classified as a Class B waterway by the NHDES- WD. To achieve this classification specific standards of water quality are provided in New Hampshire State Law RSA 485-A. The associated pH range is 6.5 to 8.0 according to RSA 485-A:8. Since the ambient water quality criteria for Ammonia decrease with the increasing pH value, EPA must establish criteria to develop effluent limits in such a situation that are protective of the aquatic

resource. Thus, the pH of 8.0 was not an assumed value for the Oyster River, but rather it is the upper bound of the pH range within which the pH values can fluctuate and still achieve the Class B standard.

The Fact Sheet correctly cites the reference document with the pertinent water quality criteria for ammonia. The acute and chronic criteria tables are provided on pages 30 and 31.

**COMMENT NO. 5:**
The permittee requests that the final permit include seasonal ammonia limits because: 1) the ammonia criteria are greater when the receiving water temperatures are less than the 20° C value used to determine the limits in the draft permit and 2) it is more difficult to completely nitrify any non-enclosed plant in New England during non summer conditions. These seasonal ammonia limits should be based on actual seasonal receiving water flow, temperature, pH, and salinity. It is important to note the increase in wastewater flows and loads to the plant during the non summer periods from the University of New Hampshire further complicates the difficulty to completely nitrify. Many seacoast area communities generate higher flows and loads to the treatment plant during the summer period.

**RESPONSE NO. 5:**
EPA agrees with the need for seasonal ammonia limits; however, the available ammonia data from the Whole Effluent Toxicity (WET) tests are not adequate to determine if ammonia effluent limitations are necessary as explained below. Accordingly, the final permit was revised to require reporting of the Average Monthly and Maximum Daily values for ammonia using a 24-Hour Composite sample and 2/week measurement frequency. These monitoring requirements are required as part of the EPA/NHDES-WD Effluent Monitoring Guidance.

The temperature and salinity monitoring data for the Oyster River recently obtained from the Jackson Estuarine Laboratory were used to determine the saltwater ammonia criteria as explained in the Fact Sheet. These data were collected from 1990 to1997 as part of five separate studies in Great Bay. The resulting acute and chronic saltwater ammonia criteria (expressed in terms of Ammonia Nitrogen as N) are 17.2 and 2.6 mg/L for the November to April period, and 8.5 and 1.3 mg/L for the May to October period, respectively. These same seasonal periods are utilized in other NPDES permits in the Great Bay region.

The Fact Sheet details the development of permit limits for a toxic pollutant such as ammonia that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water-quality criterion. The reasonable potential process is also explained.
A further analysis of the limited ammonia data from the WET tests and the proposed seasonal ammonia limits (calculated with the 1.7 dilution factor), indicates these data (ranked by season) are not sufficient to determine that Durham's discharge causes or contributes to a violation of the State's narrative water quality criteria for toxicity. The ammonia monitoring requirements are imposed in the final permit to provide the necessary data for a "reasonable potential" determination.

While it is difficult to speculate on the actual ammonia monitoring results, EPA anticipates

analyzing these results when at least two years of monitoring data are available to determine the need for ammonia limits. The reopener clause in the final permit (Part I.F) provides for a permit modification if the monitoring results indicate the discharge causes or contributes to an exceedance of the State's narrative criteria for toxicity or numeric water quality criteria for ammonia in saltwater.

EPA believes the critical dilution for the non summer period in the Oyster River estuary would not be significantly different from the existing 1.7:1 value. This determination is based on the following factors: location of the outfall near the head of tide in the estuary, shore line placement of the outfall structure, and occurrence of low water slack during the non summer spring tides with a small depth of water above the outfall pipe's invert. These factors combine to meet the low flow condition for tidal waters in the New Hampshire Water Quality Statutes. EPA did not receive information or data to support computation of a different dilution value during the non summer period. If additional information or data become available to compute the critical dilution, EPA will consider a written request to modify the permit using the previously mentioned reopener clause in Part I.F.

**COMMENT NO. 6:**
The pH range in the final permit should be increased to 6.0 to 9.0 from the 6.5 to 8.0 range in the draft permit because pH levels outside the range in the permit may be present due to natural causes or as a result of the treatment process if the plant is required to nitrify in the future.

**RESPONSE NO. 6:**
The pH range limitation in the draft permit is a State Certification requirement. This requirement also includes specific provisions for a demonstration project (see Part I.D.1.a ) that may allow for a wider pH range. In anticipation of such requests by a permittee, the Special Conditions Part of the permit allows for a change in the permitted pH limit range in writing by EPA when the provisions of this Part are followed. Refer to the Fact Sheet and the final permit for additional information. Specific questions on the demonstration project should be discussed with the NHDES.

Before issuance of an NPDES permit, EPA is required by the regulations to obtain from the NHDES a State Certification that the effluent limitations are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. For example, the Final Permit includes the pH and bacteria effluent limitations and Part I.D, State Permit Conditions, as requirements of the State Certification process.

**COMMENT NO. 7:**
The permittee requests a revision in the bacteria requirement in the final permit to Fecal Coliform instead of Total Coliform as required in the draft permit. The bacteria requirement in other area communities such as Seabrook and Dover allow Fecal Coliform. This change would provide a more direct indicator of the plant's performance to remove Fecal Coliform.

**RESPONSE NO. 7:**
EPA discussed this bacteria requirement revision with the NHDES-WD and revised the bacteria requirement in the final permit to Fecal Coliform. The bacteria limit is a State Certification requirement and the NHDES concurs with this revision.

**COMMENT NO. 8:**
The permittee requests a reduction in the two per day sampling frequency for Total Residual Chlorine (TRC) to once per day on weekends and holidays due to limited staffing on these days. Two TRC measurements during a 3 hour period on weekends and holidays would not likely result in any appreciable changes in the treatment process.

**RESPONSE NO. 8:**
In March 1993, EPA and the NHDES-WD began implementation of a monitoring guidance that provides a consistent approach to define the measurement frequency of the various effluent characteristics during the NPDES permit reissuance process. The EPA/NHDES-WD Effluent Monitoring Guidance as revised on July 19, 1999 was used to establish the monitoring frequencies for Total Residual Chlorine in the seacoast discharges. Minimum monitoring frequencies will provide consistency between permits and establishes equity between dischargers without imposing an undue burden. The TRC monitoring requirements result from the NHDES implementing a Coastal Compliance Program in 1994 to allow the resumption of shellfish harvesting. Objectives of this Program include: insure wastewater treatment plants consistently meet the bacteria and residual chlorine residual limits and insure the NHDES, Watershed Management Bureau is notified in the event of a discharge of raw sewage or bypass of the disinfection system.

The permittee may want to review the weekends and holidays sampling schedule to verify the TRC measurements are representative of the plant's dechlorination system process as required by Part II Section C. 1.a (Monitoring and Records).

The permittee may formally request a reduction in the monitoring frequency at any time. EPA will consider a written permit modification request when adequate data or additional supporting documentation are available for evaluation to demonstrate compliance with the pertinent effluent limitations.

**COMMENT NO.9**:
A reduction in the measurement frequency of the metals to once per month is requested by the permittee. Grab samples should be utilized with the clean sampling techniques.

**RESPONSE NO. 9:**
The twice per month sampling frequency for metals is based on the EPA/NHDES-WD sampling guidance mentioned in the preceding response. This minimum sampling frequency is necessary to measure any effluent changes in the metals content within each month. The permittee may formally request a reduction in the monitoring frequency at any time. EPA will consider a written permit modification request that satisfy the requirements mentioned in the above Response.

EPA agrees with the use of grab samples as part of the clean sampling techniques approach. The Sample Type for Total Recoverable Copper and Zinc is revised to Grab in the final permit.

In response to the permittee's request, EPA also reviewed the requirement in the draft permit to use the clean techniques approach during the metals sampling as part of the chemical analysis for the

quarterly Whole Effluent Toxicity tests. EPA has deleted this requirement in the final permit as part of WET testing since the available data for these metals (Cadmium, Chromium, Lead, and Nickel) indicate there is no reasonable potential to exceed the pertinent water quality criteria.

**COMMENT NO. 10**:
An alternate dilution water is requested by the permittee for the whole effluent toxicity testing because it has been reported that the receiving water (Oyster River) has impacted the toxicity testing results.

**RESPONSE NO. 10:**
A review of the eight whole toxicity tests results from April 1997 to January 1999 for the 3 species specified by Durham's existing permit indicate the only two violations or test failures occurred with the specie Cyprinodon variegatus which is replaced by Arbacia punctulata in the draft permit. EPA believes it is premature to allow the use of an alternate dilution water for toxicity testing in the final permit since the specie causing the test failures is replaced in the final permit.

Both the Toxicity Test Procedures and Protocols required by the final permit include a provision the permittee can follow if the receiving water diluent is found to be, or suspected to be toxic or unreliable. As noted in these Protocols " 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."

**COMMENT NO. 11:**
The permittee wishes to reserve the right to request a public hearing on the draft permit pending the response to their request for a delay and for modifying the draft permit.

**RESPONSE NO. 11**:
According to EPA regulations requests for a public hearing along with the nature of the issues proposed to be raised in the hearing are to be submitted before the close of the public comment period. EPA did not receive such a request from the permittee.

As mentioned above, EPA believes the revisions in the final permit as explained in this document respond to Durham's comments and concerns.

**COMMENT NO. 12:**
Correct the reference to page A-7 in the explanation of superscript 11 on page 4 of the draft permit since there is no page A-7.

**RESPONSE NO. 12**:
EPA acknowledges this typographical error and revised the page number to A-6 in the final permit.

**COMMENT NO. 13**:
The guidance document mentioned in paragraph 5 on page 7 of the draft permit should be identified since there are 98 pages of attachments with the permit according to the commenter.

**RESPONSE NO. 13:**
EPA agrees and has revised Parts I.B.5 and 8 in the final permit to mention the Sludge Compliance Guidance document to agree with the reference on page one of the permit.

**COMMENT NO. 14:**
The commenter questions if the gaging station mentioned on page 4 of the Fact Sheet and identified on Attachment A in the adjacent Town of Lee is the gaging station of interest?

**RESPONSE NO. 14:**
The sole purpose of Attachment A is to depict the location of Outfall 001 and the location of Durham's Wastewater Treatment Facility which is shown on the base map. A portion of the US Geological Survey topographic quadrangle map covering the study area serves as the base map for this purpose. EPA understands the location of the Oyster River near Durham gage is given as 2.5 miles west of Durham which would seem to be the location shown on the map.

**COMMENT NO. 15**:
The commenter requests changing the discussion on page 8 of the Fact Sheet concerning the reporting requirements for industrial users to reflect the reporting requirements in Part I.D of the draft permit.

**RESPONSE NO. 15:**
Since this discussion pertains to the requirements in Parts I. A.8 and 9 of the draft permit, no further response is required.

**COMMENT NO. 16**:
The commenter mentions the "average of average monthly" Ammonia (N) value of 7.6 mg/L listed in Fact Sheet, Attachment B seems unlikely as the Average Monthly Limit since it is greater than five times the daily limit as shown by Attachment C.

**RESPONSE NO. 16:**
EPA believes the comment is referring to the difference between the Average Monthly and Maximum Daily Ammonia limits which are calculated as shown in Attachment C since Attachment B provides a summary of the discharge monitoring data including data from the whole effluent toxicity reports. The commenter is correct in that the acute saltwater water quality criterion differs by at least a factor of 6 from the chronic saltwater criterion.

**COMMENT NO. 17**:
In a later comment, the commenter just ascertained that some of Durham's sludge is sent to the University of New Hampshire's experimental site in Madbury, NH. The sludge regulations governing land application should be included in the permit.

**RESPONSE NO. 17:**
The information on Durham's Interim Sewage Sludge Permit Application form completed on 5-6-98 and submitted as part of the NPDES permit renewal process confirms the statement in the Fact Sheet on the sludge disposal practice in use at this facility. The Sludge Conditions in the final permit and the Sludge Compliance Guidance document will govern if changes in the sludge disposal practice occur during the term of this permit.

**ADDITIONAL REMARKS:**
The Minimum Level (ML) definition in superscript (13) on page 5 of the final permit was updated to the current language used for this definition in other recently issued NPDES permits. Reporting of the zero (non-detect) values was clarified.

During the preparation of the draft permit and Fact Sheet for Public Notice, EPA made an typographical error in the Fact Sheet dated 09/09/99. According to EPA regulations, the Fact Sheet is prepared to support the draft permit and, therefore, it is not revised at the time of the final permit issuance. This Response to Comments document which is a part of the administrative record corrects this oversight. The Section on Essential Fish Habitat was incomplete and this Section of the Fact Sheet should read as provided below.

Fact Sheet Section VI. 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 NMFS if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" 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 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or

physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

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

The following managed species are believed to be present during at least one lifestage within the Great Bay Estuary, which encompasses the existing discharge site:

Atlantic salmon (Salmo salar)
Atlantic cod (Gadus morhua)
haddock (Melanogrammus aeglefinus)
pollock (Pollachius virens)
red hake (Urophycis chuss)
white hake (Urophycis tenuis)
winter flounder (Pleuronectes americanus)
yellowtail flounder (Pleuronectes ferruginea)
windowpane flounder (Scopthalmus aquosus)
Atlantic halibut (Hippoglossus hippoglossus)
Atlantic sea scallop (Placopecten magellanicus)
Atlantic sea herring (Clupea harengus)
bluefish (Pomatomus saltatrix)
Atlantic mackerel (Scomber scombrus)

Based on the permit requirements identified in this Fact Sheet that are designed to be protective of all estuarine and marine species, EPA has determined that a formal EFH consultation with NMFS is not required because the proposed discharge will not adversely effect EFH. However, if adverse effects to EFH do occur as a result of this permit action, or if new information becomes available that changes the basis for this determination, then NMFS will be notified and consultation will be promptly initiated.

December 6, 1999