

## **PART II: OTHER PERMIT REQUIREMENTS**

### **A. CONTRIBUTING INDUSTRIES AND PRETREATMENT REQUIREMENTS**

1. The following pollutants shall not be introduced into a Publicly Owned Treatment Works (POTW) facility, defined in 40 CFR 403.3(o) “as any devices and systems used in storage, treatment, recycling and reclamation of municipal sewage and industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and from such treatment works.”
  - a. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, wastestreams with a closed cup flashpoint of less than 60°C (140°F) using the test methods specified in 40 CFR 261.21;
  - b. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, unless the works are specifically designed to accommodate such discharges;
  - c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, resulting in interference;
  - d. Any pollutant, including oxygen demanding pollutants (e.g., BOD), released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW;
  - e. Heat in amounts which will inhibit biological activity in the POTW resulting in interference but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 40°C (104°F) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits;
  - f. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
  - g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; and
  - h. Any trucked or hauled pollutants, except at discharge points designated by the POTW.
2. The permittee shall require any indirect discharger to the treatment works to comply with the reporting requirements of Sections 204(b), 307, and 308 of the Act, including any requirements established under 40 CFR Part 403.
3. The permittee shall provide adequate notice of the following:
  - a. Any new introduction of pollutants into the treatment works from an indirect discharger which would be subject to Sections 301 and 306 of the Act and/or Sections 40 CFR 405-499 if it were directly discharging those pollutants; and
  - b. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit.

- c. Any notice shall include information on (i) the quality and quantity of effluent to be introduced into the treatment works, and (ii) any anticipated impact of the change on the quality or quantity of effluent to be discharged from the POTW.

## **B. REOPENER CLAUSE**

This permit may be reopened for modification or revocation and reissuance to require additional monitoring and/or effluent limitations where actual or potential exceedances of State water quality criteria are determined to be the result of the permittee's discharge to the receiving water(s), or a revised Total Maximum Daily Load is established for the receiving water(s), or when required as technology. Modification or revocation and reissuance of the permit shall follow regulations listed at 40 CFR Part 124.5.

## **C. BIOSOLIDS/SEWAGE SLUDGE REQUIREMENTS**

Biosolids/sewage sludge disposal practices shall comply with the Federal regulations for land application of biosolids/sewage sludge, established at 40 CFR Part 503, and the DEQ rules governing Sludge Management (OAC 252:606) as applicable.

The biosolids/sewage sludge removal shall also comply with the requirements of Sludge Management Plan No.: 3555033, approved by Department of Environmental Quality on May 31, 1996. The biosolids/sewage sludge disposal shall also comply with the requirements of Landfill Permit number 3555028, that allows the permittee to landfill biosolids/sewage sludge at the Southwest Landfill, located in Oklahoma County, Oklahoma.

The permittee is required to maintain all records relevant to sewage biosolids/sewage sludge disposal for the life of the permit. These records shall be made available to the ODEQ upon request.

The permittee shall give 120 days prior notice to DEQ of any change planned in the biosolids/sewage sludge disposal practice.

## **D. POLLUTION PREVENTION REQUIREMENTS**

1. The permittee shall institute a program within 12 months of the effective date of the permit (or continue an existing program) directed towards optimizing the efficiency and extending the useful life of the facility. The permittee shall consider the following items in the program:
  - a. The influent loadings, flow and design capacity;
  - b. The effluent quality and plant performance;
  - c. The age and expected life of the wastewater treatment facility's equipment;
  - d. Bypasses and overflows of the tributary sewerage system and treatment works;
  - e. New developments at the facility;
  - f. Operator certification and training plans and status;
  - g. The financial status of the facility;
  - h. Preventative maintenance programs and equipment conditions; and
  - i. An overall evaluation of conditions at the facility.
2. The permittee shall prepare the following information on the biosolids/sewage sludge generated by the facility:
  - a. An annual quantitative tabulation of the ultimate disposition of all biosolids/sewage sludge (including, but not limited to, the amount beneficially reused, landfilled, and incinerated).

- b. An assessment of technological processes and an economic analysis evaluating the potential for beneficial reuse of all biosolids/sewage sludge not currently beneficially reused including a listing of any steps which would be required to achieve the biosolids/sewage sludge quality necessary to beneficially reuse the biosolids/sewage sludge.
- c. A description of, including the expected results and the anticipated timing for, all projects in process, in planning and/or being considered which are directed towards additional beneficial reuse of biosolids/sewage sludge.
- d. An analysis of one composite sample of the biosolids/sewage sludge collected prior to ultimate re-use or disposal shall be performed for the pollutants listed in Part IV, Element 1, Section III, Table 3 of the permit.
- e. A listing of the specific steps (controls/changes) which would be necessary to achieve and sustain the quality of the biosolids/sewage sludge so that the pollutant concentrations in the biosolids/sewage sludge fall below the pollutant concentration criteria listed in Part IV, Element I, Section III, Table 3 of the permit.
- f. A listing of, and the anticipated timing for, all projects in process, in planning, and/or being considered which are directed towards meeting the biosolids/sewage sludge quality referenced in (e) above.

The permittee shall certify in writing, within three years of the effective date of the permit, that all pertinent information is available. This certification shall be submitted to:

Oklahoma Department of Environmental Quality  
Water Quality Division  
Municipal Permits Section  
P. O. Box 1677  
707 North Robinson Street  
Oklahoma City, Oklahoma 73101-1677

**E. WHOLE EFFLUENT TOXICITY TESTING FOR DAPHNID SPECIES  
(7-DAY CHRONIC NOEC, STATIC RENEWAL, FRESHWATER)**

1. SCOPE AND METHODOLOGY

- a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. No samples or portions of samples from one outfall may be composited with samples or portions of samples from another outfall. The permittee shall biomonitor for *Ceriodaphnia dubia* in accordance with the WET testing frequencies prescribed in Part I.

The permittee is encouraged to perform required biomonitoring activities as early in the reporting period as is practical so as to ensure sufficient time remains in the reporting period should repeat tests be necessary.

All laboratory analyses for the biomonitoring parameters specified in this permit must be performed by a laboratory certified by the Oklahoma Department of Environmental Quality for those parameters.

Provisions for performance-based monitoring frequency reductions are contained in Item 5 of this section.

Intervals between test initiation dates shall be a function of the required testing frequency, as follows:

- Monthly retests: No less than 20 days and no more than 40 days.
- Quarterly: No less than 2 months and no more than 4 months.
- Semi-annually: No less than 4 months and no more than 8 months.

|                                       |  |
|---------------------------------------|--|
| APPLICABLE TO OUTFALL(S):             | 001  |
| REPORTED ON DMR AS OUTFALL(S):        | TX1  |
| CRITICAL DILUTION:                    | 100%   |
| EFFLUENT DILUTION SERIES (ALL TESTS): | <u>100%</u> , 75%, 56%, 42%, and 32%             |
| SAMPLE TYPE:                          | Defined at Part I                                |
| TEST SPECIES/METHODS:                 | 40 CFR 136, except as required by EPA, Region 6. |

*Ceriodaphnia dubia* chronic static renewal 7-day survival and reproduction test, Method 1002.0, EPA-821-R-02-013 (October 2002), or most recent update thereof. A minimum of ten (10) replicates of a single (1) organism per test chamber, must be used in the control and in each effluent dilution of this test. This test should be terminated when 60% of the surviving females in the control produce three broods or at the end of eight days, whichever comes first. If this criterion is not met at the end of 8 days, the test must be repeated.

b. CHRONIC LETHAL EFFECT TEST FAILURE

The NOEC<sub>L</sub> (No Observed Lethal Effect Concentration) is defined as the greatest effluent dilution at and below which lethality (toxicity) that is statistically different from the control (0% effluent) at the 95% confidence level does not occur. Chronic lethal test failure (chronic NOEC<sub>L</sub> test) is defined as a demonstration of a statistically significant lethal effect at test completion at or below the critical dilution.

c. CHRONIC SUBLETHAL EFFECT TEST FAILURE

The NOEC<sub>S</sub> (No Observed Sublethal Effect Concentration) is defined as the greatest effluent dilution at and below which sublethality (toxicity: inhibited reproduction in the *Ceriodaphnia dubia* test) that is statistically different from the control (0% effluent) at the 95% confidence level does not occur. Chronic sublethal test failure (chronic NOEC<sub>S</sub> test) is defined as a demonstration of a statistically significant sublethal effect at test completion at or below the critical dilution.

d. REOPENER CLAUSE

This permit may be reopened to require whole effluent toxicity limits, chemical specific effluent limits, additional testing, and/or other appropriate actions to address toxicity.

2. TESTING REQUIREMENTS DUE TO CHRONIC LETHAL AND/OR SUBLETHAL TEST FAILURE

Upon becoming aware of the failure of any lethal and/or sublethal test, the permittee shall notify the DEQ Water Quality Division biomonitoring coordinator immediately, and in writing within 5 working days of the test failure with a summary of the results of and any other pertinent circumstances associated with the failed test.

a. Whenever there is a lethal and/or sublethal effect test failure during routine testing, the frequency of testing shall automatically increase to, or continue at, as appropriate, the WET testing frequency prescribed in Part I for the remaining life of the permit. In addition, two (2) additional monthly tests (retests) are required. The two additional tests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute a retest for a routine toxicity test. A full laboratory report for the failed routine test and both additional tests, if required, shall be prepared and submitted to the DEQ in accordance with procedures outlined in Item 4 below.

b. PERSISTENT LETHALITY AND/OR SUBLETHALITY

If either of the two additional tests result in an  $NOEC_L$  and/or  $NOECs$  value less than the critical dilution, persistent lethality and/or sublethality is exhibited, and the permittee shall initiate a Toxicity Reduction Evaluation (TRE) as specified in Item 6 below. The TRE initiation date will be the test completion date of the first failed retest. The permittee may request a temporary exemption to this TRE-triggering criterion if, and only if, the permittee is under a compliance schedule defined in an OPDES permit or an enforcement order to effect aquatic toxicity reduction measures, regardless of whether such measures resulted from a previous TRE.

c. INTERMITTENT LETHALITY AND/OR SUBLETHALITY

If both additional tests result in an  $NOEC_L$  and/or  $NOECs$  value greater than or equal to the critical dilution, persistent lethality and/or sublethality is not exhibited. However, if any routine test lethal and/or sublethal effect test failure occurs within 18 months of a prior lethal and/or sublethal effect test failure, intermittent lethality and/or sublethality is exhibited, and the permittee may be required by the DEQ to initiate a TRE, as described in Item 6 below, based on the severity and pattern of such lethal and/or sublethal effect failure over time.

d. SUSPENSION OF RETESTING REQUIREMENTS DURING A TRE

Retesting requirements in Item 2.a are temporarily suspended upon submittal of a TRE Action Plan. Such suspension of retesting requirements applies only to the species under evaluation by a TRE and only to the period during which a TRE is being performed.

3. REQUIRED TOXICITY TESTING CONDITIONS

a. Test Acceptance

The permittee shall repeat a test, including the control and all effluent dilutions, if the procedures and quality assurance requirements defined in the test methods or in this permit are not satisfied, including the following additional criteria:

(1) The toxicity test control (0% effluent) must have survival equal to or greater than 80%.

- (2) The mean number of *Ceriodaphnia dubia* neonates produced per surviving female in the control (0% effluent) must be 15 or more.
- (3) Sixty (60) percent of the surviving *Ceriodaphnia dubia* females in the control must produce three broods.
- (4) The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for the young of surviving females in the *Ceriodaphnia dubia* reproduction test.
- (5) The percent coefficient of variation between replicates shall be 40% or less in the critical dilution, unless significant lethal or sublethal effects are exhibited for the young of surviving females in the *Ceriodaphnia dubia* reproduction test.
- (6) As documented at test termination, no more than forty (40) percent of the *Ceriodaphnia dubia* test organisms in the control (0% effluent) or any effluent dilution shall be male.
- (7) The Percent Minimum Significant Difference (PMSD) shall be in the range of 13-47 for *Ceriodaphnia dubia* reproduction. If the test PMSD is less than 13, 13 may be substituted for the PMSD.

Test failure may not be construed or reported as invalid due to a coefficient of variation value of greater than 40%. A repeat test shall be conducted within the reporting period of any test determined to be invalid.

b. Statistical Interpretation

- (1) For the *Ceriodaphnia dubia* survival test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be Fisher's Exact Test as described in EPA-821-R-02-013 or most recent update thereof.
- (2) For the *Ceriodaphnia dubia* reproduction test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be in accordance with the methods for determining the No Observed Effect Concentration (NOEC) as described in EPA-821-R-02-013 or most recent update thereof.
- (3) If the conditions of test acceptability are met in Item 3.a above and the percent survival of the test organism is equal to or greater than 80% in the critical dilution concentration and all lower dilution concentrations, the test shall be considered to be a passing test, and the permittee shall report an  $NOEC_L$  of not less than the critical dilution for the DMR reporting requirements found in Item 4 below.

c. Dilution Water

- (1) Dilution water used in the toxicity tests will be receiving water collected as close to the point of discharge as possible but unaffected by the discharge. The permittee shall substitute synthetic dilution water of similar pH, hardness and alkalinity to the closest downstream perennial water where the toxicity test is conducted on an effluent discharge to a receiving stream classified as intermittent or to a receiving stream with no flow due to zero flow conditions.

- (2) If the receiving water is unsatisfactory as a result of instream toxicity (fails to fulfill the test acceptance criteria of Item 3.a above), the permittee must submit the test results exhibiting receiving water toxicity with the full test report required in Item 4 below and may thereafter substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:
  - (a) a synthetic dilution water control which fulfills the test acceptance requirements of Item 3.a above was run concurrently with the receiving water control;
  - (b) the test indicating receiving water toxicity was carried out to completion; and
  - (c) the synthetic dilution water had a pH, hardness and alkalinity similar to that of the receiving water or closest downstream perennial water not adversely affected by the discharge, provided the magnitude of these parameters will not cause toxicity in the synthetic dilution water.

d. Samples and Composites

- (1) Unless grab sampling is specifically authorized in Part I of the permit, the permittee shall collect three flow-weighted 24-hour composite samples representative of the flows during normal operation from the outfall(s) listed at Item 1.a above. If grab sampling is authorized, all requirements specified below for composite sampling also pertain to grab sampling. In such cases, collection of the grab sample is considered equivalent to collection of the last portion of a composite sample. Unless otherwise specified in Part I of the permit, a 24-hour composite sample consists of a minimum of 12 effluent portions collected at equal time intervals representative of a 24-hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a 24-hour operating day.
- (2) The first composite effluent sample shall be used to initiate each test. The permittee must initiate the toxicity test within 36 hours after the collection of the last portion of the first composite sample. Collection of the second and third composite effluent samples must be timed so as to permit an approximately equal use distribution of the three composite samples for daily static renewals. In no case shall the holding time of the second and third composite samples (between collection of the last portion of the sample and its first use) exceed 72 hours. All samples shall be chilled to not more than 6 °C but not frozen during collection, shipping and/or storage.
- (3) The permittee shall collect the 24-hour composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis.
- (4) If it is anticipated that flow from the outfall being tested may cease prior to collection of all required effluent samples, the permittee must ensure that the first and second composite effluent samples are of sufficient volume to complete the required testing with daily renewal of effluent. The abbreviated effluent composite sample collection duration, the static renewal protocol associated with an abbreviated sample collection, and a summary of the circumstances justifying collection of an abbreviated sample must be adequately documented in the full test report required in Item 4 below. The DEQ reserves the right to require a retest and/or consider the permittee in violation of this permit if the basis offered for justification of an abbreviated sample is insufficient, flawed, or in any way reflects an effort on the part of the permittee to avoid test failure by use of an abbreviated sample.

4. REPORTING

- a. The permittee shall provide a full laboratory report of the results of all tests conducted pursuant to this section in accordance with the Report Preparation Section of EPA-821-R-02-013 for every valid or invalid toxicity test initiated, whether carried to completion or not. The permittee shall retain each full report pursuant to the records retention provisions of Part III of this permit. The permittee shall submit full laboratory test reports for all tests initiated, regardless of whether the tests are carried to completion, to the DEQ no later than the 15<sup>th</sup> day of the month following completion of the test, including any test which is considered invalid, is terminated early for any reason, or which indicates receiving water toxicity.
- b. A valid test (excluding retests) must be reported on the DMR for each reporting period specified in Part I of this permit unless the permittee is performing a TRE, which may increase the frequency of testing and reporting. A DMR must be submitted by the 15<sup>th</sup> day of the month following completion of any valid test. The full laboratory report for the test (see Item 4.a above) shall be submitted along with the DMR. If a lethal and/or sublethal test failure is experienced, two copies of the blank DMR **for the applicable reporting period** shall be made in advance of completing and submitting the DMR so that the DMR copies may be used to report results of the required retests (22415, 22416) with the dates at the top of the page for the same reporting period in which the failure occurred.

If more than one valid test (excluding retests) is performed during a reporting period, the permittee shall report the lowest lethality and sublethality NOEC effluent concentrations over all such tests as the 7-day minimum on the DMR for the reporting period in question, denoting the specific dates of each test in the “comments” section of the DMR. Under no circumstance shall the monitoring/reporting period dates at the top of the DMR form be altered.

If any test results in anomalous NOEC<sub>L</sub> or NOEC<sub>S</sub> findings (i.e., it indicates an interrupted dose response across the dilution series), the DEQ recommends that the permittee contact a DEQ biomonitoring coordinator for a technical review of the test results prior to submitting the full test report and DMR. A summary of all tests initiated during the reporting period, including invalid tests, repeat tests and retests, shall be attached to the reporting period DMR for DEQ review. A test is a REPEAT test if it is performed as a result of a previously invalid test. A test is a RETEST if it is performed as a result of a previously failed test.

- (1) The reporting period test summary attached to the DMR shall be organized as follows:
  - (a) Invalid tests (basis for test invalidity must be described)
  - (b) Valid tests (other than retests) initiated during current reporting period
  - (c) Valid retests for tests failed during previous reporting period (if not submitted in the previous reporting period test summary)
  - (d) Valid retests for tests failed during current reporting period
- (2) The following information shall be listed in the reporting period test summary for each valid test in categories (b) through (d) in Item 4.b(1) above:
  - (a) Test species
  - (b) Date of test initiation at laboratory

- (c) Results of all concurrent effluent analyses specified in Part I of this permit
  - (d) All test result parameters specified in Item 4.c below.
- c. The permittee shall report the following results for all VALID toxicity tests (excluding retests) on the DMR(s) for that reporting period in accordance with Item 4.b above and Part III of this permit.
- (1) Parameter TLP3B: If the *Ceriodaphnia dubia* NOEC<sub>L</sub> for survival is less than the critical dilution, report a "1"; otherwise, report a "0".
  - (2) Parameter TOP3B: Report the *Ceriodaphnia dubia* NOEC<sub>L</sub> value for survival.
  - (3) Parameter TJP3B: Report the *Ceriodaphnia dubia* percent mortality in the critical dilution at test completion.
  - (4) Parameter TGP3B: If the *Ceriodaphnia dubia* NOEC<sub>S</sub> for reproduction is less than the critical dilution, report a "1"; otherwise, report a "0".
  - (5) Parameter TPP3B: Report the *Ceriodaphnia dubia* NOEC<sub>S</sub> value for reproduction.
  - (6) Parameter TQP3B: Report the highest coefficient of variation (critical dilution or control) for *Ceriodaphnia dubia* reproduction.
- d. The permittee shall report the following results for all VALID toxicity retests on the DMR(s) for that reporting period.
- (1) Retest #1 (STORET 22415): If the first monthly retest following failure of a routine test results in an NOEC for lethality and/or sublethality less than the critical dilution, report a "1"; otherwise, report a "0".
  - (2) Retest #2 (STORET 22416): If the second monthly retest following failure of a routine test results in an NOEC for lethality and/or sublethality less than the critical dilution, report a "1"; otherwise, report a "0".

Results of all retests shall be reported on a copy of the DMR for the reporting period (see Item 4.b above) in which the triggering routine test failure is experienced. Such retest results (using STORET codes 22415 and 22416 only) shall be submitted by no later than the 15<sup>th</sup> day of the month following completion of the retest. The full report for the retest (see Item 4.a above) shall be submitted along with the retest DMR. Even if a retest cannot be conducted before the end of the reporting period for which it is required (due to test initiation interval requirements), the retest results shall still be reported for the reporting period in which the triggering test failure is experienced. Under no circumstance shall the monitoring/reporting period dates on a supplemental retest DMR ever be altered. The permittee shall indicate the retest date in the "comments" section of the supplemental DMR and insert the date the DMR is submitted in the lower right hand corner. In this manner, both retests are reported for the same reporting period as the failed routine test triggering the retests. If retesting is not required during a given reporting period, the permittee shall leave the DMR retest fields blank.

5. MONITORING FREQUENCY REDUCTION

- a. The permittee may apply for a testing frequency reduction upon the successful completion of the first year of testing with no lethal or sublethal effects demonstrated at or below the critical dilution. Certification in accordance with Item 5.b of this section shall be submitted at the time of such application for monitoring frequency reduction. If granted, the monitoring frequency may be reduced to not less than once per 6 months (once each during the periods June 1 through September 30 and December 1 through March 31).
- b. **CERTIFICATION:** The permittee must certify in writing that no daphnid species lethal or sublethal test failures have occurred and that all tests meet all test acceptability criteria in Item 3.a above. In addition, the permittee must provide a summary of all tests initiated during the period of certification including test initiation dates, test acceptability parameters, NOEC<sub>L</sub> and NOECs values, percent mortality at the critical dilution, and coefficients of variation for the controls and critical dilutions. If the certification is approvable, the DEQ will issue a letter of confirmation of the monitoring frequency reduction. A copy of the confirmation letter will be forwarded to the DEQ's Permit Compliance System unit to update the permit reporting requirements. The DEQ may deny the certification if it determines that, during the period for which the certification is submitted, there were errors in meeting test acceptability requirements, errors in statistical interpretation affecting test results reported on DMRs, late submissions of test reports or submissions of substantively incomplete test reports. If the certification is denied, the permittee shall continue biomonitoring at a frequency of once per quarter until the permit is reissued.
- c. **SURVIVAL FAILURES AFTER A MONITORING FREQUENCY REDUCTION:** If any test fails the survival endpoint at any time after the granting of a monitoring frequency reduction, two monthly retests are required in accordance with Item 2 above (unless the permittee is performing a TRE) and the monitoring frequency shall be increased to the WET testing frequency prescribed in Part I until the permit is reissued.

6. TOXICITY REDUCTION EVALUATION (TRE)

- a. Within ninety (90) days of confirming toxicity in the retests, the permittee shall submit to the DEQ a Toxicity Reduction Evaluation (TRE) Action Plan and Schedule for conducting a TRE. The TRE Action Plan shall specify the approach and methodology to be used in performing the TRE. A Toxicity Reduction Evaluation is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The TRE Action Plan shall lead to the successful elimination of effluent toxicity at the critical dilution and include the following:
  - (1) **Specific Activities.** The plan shall detail the specific approach the permittee intends to utilize in conducting the TRE. The approach may include toxicity characterizations, identifications and confirmation activities, source evaluation, treatability studies, or alternative approaches. When the permittee conducts Toxicity Characterization Procedures, the permittee shall perform multiple characterizations and follow the procedures specified in the documents "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA-600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA-600/6-91/005F), or alternate procedures. When the permittee conducts Toxicity Identification Evaluations and

Confirmations, the permittee shall perform multiple identifications and follow the methods specified in the documents “Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity” (EPA/600/R-92/080) and “Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity” (EPA/600/R-92/081), as appropriate.

The DEQ requires that a thorough audit of the design, operation and maintenance of the entire plant be done at the **outset** of the TRE/TIE, rather than later in the process.

The documents referenced above may be available through the

National Technical Information Service (NTIS)

U.S. Department of Commerce  
National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22161  
1-(800) 553-6847, or at the

National Service Center for Environmental Publications (NSCEP):

U.S. EPA/NSCEP  
P.O. Box 42419  
Cincinnati, Ohio 45242-0419  
1-(800) 490-9198

E-mail: ncepimal@one.net

- (2) Sampling Plan (e.g., locations, methods, holding times, chain of custody, preservation, etc.). The effluent sample volume collected for all tests shall be adequate to perform the toxicity test, toxicity characterization, identification and confirmation procedures, and conduct chemical specific analyses when a probable toxicant has been identified. Where the permittee has identified or suspects specific pollutant(s) and/or source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical specific analyses for the identified and/or suspected pollutant(s) and/or source(s) of effluent toxicity. Where toxicity was demonstrated within 48 hours of test initiation, each composite sample shall be analyzed independently. Otherwise, the permittee may substitute a composite sample, comprised of equal portions of the individual composite samples, for the chemical specific analysis.
  - (3) Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.).
  - (4) Project Organization (e.g., project staff, project manager, consulting services, etc.).
- b. The permittee shall initiate the TRE Action Plan within thirty (30) days of plan and schedule submittal. The permittee shall assume all risks for failure to achieve the required toxicity reduction.
  - c. The permittee shall submit to the DEQ a quarterly TRE Activities Report with the Discharge Monitoring Report in months to be specified, containing information on toxicity reduction evaluation activities including:

- (1) any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;
  - (2) any studies/evaluations and results on the treatability of the facility's effluent toxicity; and
  - (3) any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant toxicity at the critical dilution.
- d. The permittee shall submit to the DEQ a Final Report on Toxicity Reduction Evaluation Activities no later than twenty-eight (28) months from confirming toxicity in the retests, which provides information pertaining to the specific control mechanism selected that will, when implemented, result in reduction of effluent toxicity to no significant toxicity at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.
- e. Quarterly testing during the TRE is a minimum monitoring requirement. The DEQ recommends that permittees required to perform a TRE not rely on quarterly testing alone to ensure success in the TRE, and that additional tests be performed to capture toxic samples for identification of toxicants. Failure to identify the specific chemical compound causing toxicity test failure will normally result in a permit limit for whole effluent toxicity per federal regulations at 40 CFR 122.44(d)(1)(v).

**F. WHOLE EFFLUENT TOXICITY TESTING FOR FATHEAD MINNOWS SPECIES  
(7-DAY CHRONIC NOEC, STATIC RENEWAL, FRESHWATER)**

**1. SCOPE AND METHODOLOGY**

- a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. No samples or portions of samples from one outfall may be composited with samples or portions of samples from another outfall. The permittee shall biomonitor for *Pimephales promelas* (Fathead minnows) in accordance with the WET testing frequencies prescribed in Part I.

The permittee is encouraged to perform required biomonitoring activities as early in the reporting period as is practical so as to ensure sufficient time remains in the reporting period should repeat tests be necessary.

All laboratory analyses for the biomonitoring parameters specified in this permit must be performed by a laboratory certified by the Oklahoma Department of Environmental Quality for those parameters.

Provisions for performance-based monitoring frequency reductions are contained in Item 5 of this section.

Intervals between test initiation dates shall be a function of the required testing frequency, as follows:

- Monthly retests: No less than 20 days and no more than 40 days.
- Quarterly: No less than 2 months and no more than 4 months.

|                                       |  |
|---------------------------------------|--|
| APPLICABLE TO OUTFALL(S):             | 001  |
| REPORTED ON DMR AS OUTFALL(S):        | TX1  |
| CRITICAL DILUTION:                    | 100%   |
| EFFLUENT DILUTION SERIES (ALL TESTS): | <b>100%</b> , 75%, 56%, 42%, and 32%             |
| SAMPLE TYPE:                          | Defined at Part I                                |
| TEST SPECIES/METHODS:                 | 40 CFR 136, except as required by EPA, Region 6. |

*Pimephales promelas* (Fathead minnow) chronic static renewal 7-day larval survival and growth test, Method 1000.0, EPA-821-R-02-013 (October 2002), or most recent update thereof. A minimum of five (5) replicates with eight (8) organisms per replicate must be used in the control and in each effluent dilution of this test.

b. CHRONIC LETHAL EFFECT TEST FAILURE

The NOEC<sub>L</sub> (No Observed Lethal Effect Concentration) is defined as the greatest effluent dilution at and below which lethality (toxicity) that is statistically different from the control (0% effluent) at the 95% confidence level does not occur. Chronic lethal test failure (chronic NOEC<sub>L</sub> test) is defined as a demonstration of a statistically significant lethal (toxic) effect at test completion at or below the critical dilution.

c. CHRONIC SUBLETHAL EFFECT TEST FAILURE

The NOEC<sub>S</sub> (No Observed Sublethal Effect Concentration) is defined as the greatest effluent dilution at and below which sublethality (inhibited growth in the Fathead test) that is statistically different from the control (0% effluent) at the 95% confidence level does not occur. Chronic sublethal test failure (chronic NOEC<sub>S</sub> test) is defined as a demonstration of a statistically significant sublethal (toxic) effect at test completion at or below the critical dilution.

d. REOPENER CLAUSE

This permit may be reopened to require whole effluent toxicity limits, chemical specific effluent limits, additional testing, and/or other appropriate actions to address toxicity.

2. TESTING REQUIREMENTS DUE TO CHRONIC LETHAL AND/OR SUBLETHAL TEST FAILURE

Upon becoming aware of the failure of any lethal and/or sublethal test, the permittee shall notify the DEQ Water Quality Division biomonitoring coordinator immediately, and in writing within 5 working days of the test failure with a summary of the results of and any other pertinent circumstances associated with the failed test.

- a. Whenever there is a lethal and/or sublethal effect test failure during routine testing, the frequency of testing shall automatically increase to, or continue at, as appropriate, the WET testing frequency prescribed in Part I for the remaining life of the permit. In addition, two (2) additional monthly tests (retests) are required. The two additional tests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute a retest for

a routine toxicity test. A full laboratory report for the failed routine test and both additional tests, if required, shall be prepared and submitted to the DEQ in accordance with procedures outlined in Item 4 below.

b. PERSISTENT LETHALITY AND/OR SUBLETHALITY

If either of the two additional tests result in an  $NOEC_L$  and/or  $NOECs$  value less than the critical dilution, persistent lethality and/or sublethality is exhibited, and the permittee shall initiate a Toxicity Reduction Evaluation (TRE) as specified in Item 5 below. The TRE initiation date will be the test completion date of the first failed retest. The permittee may request a temporary exemption to this TRE-triggering criterion if, and only if, the permittee is under a compliance schedule defined in an OPDES permit or an enforcement order to effect aquatic toxicity reduction measures, regardless of whether such measures resulted from a previous TRE.

c. INTERMITTENT LETHALITY AND/OR SUBLETHALITY

If both additional tests result in an  $NOEC_L$  and/or  $NOECs$  value greater than or equal to the critical dilution, persistent lethality and/or sublethality is not exhibited. However, if any routine test lethead/or sublethal effect test failure occurs within 18 months of a prior lethal and/or sublethal effect test failure, intermittent lethality and/or sublethality is exhibited, and the permittee may be required by the DEQ to initiate a TRE, as described in Item 5 below, based on the severity and pattern of such lethal and/or sublethal effect failure over time.

d. SUSPENSION OF RETESTING REQUIREMENTS DURING A TRE

Retesting requirements in Item 2.a are temporarily suspended upon submittal of a TRE Action Plan. Such suspension of retesting requirements applies only to the species under evaluation by a TRE and only to the period during which a TRE is being performed.

3. REQUIRED TOXICITY TESTING CONDITIONS

a. Test Acceptance

The permittee shall repeat a test, including the control and all effluent dilutions, if the procedures and quality assurance requirements defined in the test methods or in this permit are not satisfied, including the following additional criteria:

- (1) The toxicity test control (0% effluent) must have survival equal to or greater than 80%.
- (2) The mean dry weight of surviving Fathead minnow larvae at the end of the 7 days in the control (0% effluent) must be 0.25 mg per larva or greater.
- (3) The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for the growth and survival endpoints of the Fathead minnow test.
- (4) The percent coefficient of variation between replicates shall be 40% or less in the critical dilution, unless significant lethal or sublethal effects are exhibited for the growth and survival endpoints of the Fathead minnow test.
- (5) The PMSD shall be in the range of 12-30 for Fathead minnow growth. If the test PMSD is less than 12, 12 may be substituted for the the PMSD.

Test failure may not be construed or reported as invalid due to a coefficient of variation value of greater than 40%. A repeat test shall be conducted within the reporting period of any test determined to be invalid.

b. Statistical Interpretation

- (1) For the Fathead minnow larval survival and growth test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be in accordance with the methods for determining the No Observed Effect Concentration (NOEC) as described in EPA-821-R-02-013 or most recent update thereof.
- (2) If the conditions of test acceptability are met in Item 3.a above and the percent survival of the test organism is equal to or greater than 80% in the critical dilution concentration and all lower dilution concentrations, the test shall be considered to be a passing test, and the permittee shall report an  $NOEC_L$  of not less than the critical dilution for the DMR reporting requirements found in Item 4 below.
- (3) If the conditions of test acceptability are met in Item 3.a above and the percent survival of the test organism is equal to or greater than 80% in the critical dilution concentration and all lower dilution concentrations, the test shall be considered to be a passing test, and the permittee shall report an  $NOEC_L$  of not less than the critical dilution for the DMR reporting requirements found in Item 4 below.

c. Dilution Water

- (1) Dilution water used in the toxicity tests will be receiving water collected as close to the point of discharge as possible but unaffected by the discharge. The permittee shall substitute synthetic dilution water of similar pH, hardness and alkalinity to the closest downstream perennial water where the toxicity test is conducted on an effluent discharge to a receiving stream classified as intermittent or to a receiving stream with no flow due to zero flow conditions.
- (2) If the receiving water is unsatisfactory as a result of instream toxicity (fails to fulfill the test acceptance criteria of Item 3.a), the permittee must submit the test results exhibiting receiving water toxicity with the full test report required in Item 4 below and may thereafter substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:
  - (a) a synthetic dilution water control which fulfills the test acceptance requirements of Item 3.a was run concurrently with the receiving water control;
  - (b) the test indicating receiving water toxicity was carried out to completion; and
  - (c) the synthetic dilution water had a pH, hardness and alkalinity similar to that of the receiving water or closest downstream perennial water not adversely affected by the discharge, provided the magnitude of these parameters will not cause toxicity in the synthetic dilution water.

d. Samples and Composites

- (1) Unless grab sampling is specifically authorized in Part I of the permit, the permittee shall collect three flow-weighted 24-hour composite samples representative of the flows during

normal operation from the outfall(s) listed at Item 1.a above. If grab sampling is authorized, all requirements specified below for composite sampling also pertain to grab sampling. In such cases, collection of the grab sample is considered equivalent to collection of the last portion of a composite sample. Unless otherwise specified in Part I of the permit, a 24-hour composite sample consists of a minimum of 12 effluent portions collected at equal time intervals representative of a 24-hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a 24-hour operating day.

- (2) The first composite effluent sample shall be used to initiate each test. The permittee must initiate the toxicity test within 36 hours after the collection of the last portion of the first composite sample. Collection of the second and third composite effluent samples must be timed so as to permit an approximately equal use distribution of the three composite samples for daily static renewals. In no case shall the holding time of the second and third composite samples (between collection of the last portion of the sample and its first use) exceed 72 hours. All samples shall be chilled to not more than 6°C but not frozen during collection, shipping and/or storage.
- (3) The permittee shall collect the 24-hour composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis.
- (4) If it is anticipated that flow from the outfall being tested may cease prior to collection of all required effluent samples, the permittee must ensure that the first and second composite effluent samples are of sufficient volume to complete the required testing with daily renewal of effluent. The abbreviated effluent composite sample collection duration, the static renewal protocol associated with an abbreviated sample collection, and a summary of the circumstances justifying collection of an abbreviated sample must be adequately documented in the full test report required in Item 4 below. The DEQ reserves the right to require a retest and/or consider the permittee in violation of this permit if the basis offered for justification of an abbreviated sample is insufficient, flawed, or in any way reflects an effort on the part of the permittee to avoid test failure by use of an abbreviated sample.

#### 4. REPORTING

- a. The permittee shall provide a full laboratory report of the results of all tests conducted pursuant to this section in accordance with the Report Preparation Section of EPA-821-R-02-013 for every valid or invalid toxicity test initiated, whether carried to completion or not. The permittee shall retain each full report pursuant to the records retention provisions of Part III of this permit. The permittee shall submit full laboratory test reports for all tests initiated, regardless of whether the tests are carried to completion, to the DEQ no later than the 15<sup>th</sup> day of the month following completion of the test, including any test which is considered invalid, is terminated early for any reason, or which indicates receiving water toxicity.
- b. A valid test (excluding retests) must be reported on the DMR for each reporting period specified in Part I of this permit unless the permittee is performing a TRE, which may increase the frequency of testing and reporting. A DMR must be submitted by the 15<sup>th</sup> day of the month following completion of any valid test. The full laboratory report for the test (see Item 4.a above) shall be submitted along with the DMR. If a lethal and/or sublethal test failure is experienced, two copies of the blank DMR **for the applicable reporting period** shall be made in advance of completing and submitting the DMR so that the DMR copies may be used to report results of the required retests (22415, 22416) with the dates at the top of the page for the same reporting period in which the failure occurred.

If more than one valid test (excluding retests) is performed during a reporting period, the permittee shall report the lowest lethality and sublethality NOEC effluent concentrations over all such tests as the 7-day minimum on the DMR for the reporting period in question, denoting the specific dates of each test in the “comments” section of the DMR. Under no circumstance shall the monitoring/reporting period dates at the top of the DMR form be altered.

If any test results in anomalous NOEC<sub>L</sub> or NOEC<sub>S</sub> findings (i.e., it indicates an interrupted dose response across the dilution series), the DEQ recommends that the permittee contact a DEQ biomonitoring coordinator for a technical review of the test results prior to submitting the full test report and DMR. A summary of all tests initiated during the reporting period, including invalid tests, repeat tests and retests, shall be attached to the reporting period DMR for DEQ review. A test is a REPEAT test if it is performed as a result of a previously invalid test. A test is a RETEST if it is performed as a result of a previously failed test.

- (1) The reporting period test summary attached to the DMR shall be organized as follows:
    - (a) Invalid tests (basis for test invalidity must be described)
    - (b) Valid tests (other than retests) initiated during current reporting period
    - (c) Valid retests for tests failed during previous reporting period (if not submitted in the previous reporting period test summary)
    - (d) Valid retests for tests failed during current reporting period
  - (2) The following information shall be listed in the reporting period test summary for each valid test in categories (b) through (d) in Item 4.b(1) above:
    - (a) Test species
    - (b) Date of test initiation at laboratory
    - (c) Results of all concurrent effluent analyses specified in Part I of this permit
    - (d) All test result parameters specified in Item 4.c below.
- c. The permittee shall report the following results for all VALID toxicity tests (excluding retests) on the DMR(s) for that reporting period in accordance with Item 4.b above and Part III of this permit.
- (1) Parameter TLP6C: If the Fathead minnow NOEC<sub>L</sub> for survival is less than the critical dilution, report a "1"; otherwise, report a "0".
  - (2) Parameter TOP6C: Report the Fathead minnow NOEC<sub>L</sub> value for survival.
  - (3) Parameter TJP6C: Report the Fathead minnow percent mortality in the critical dilution at test completion.
  - (4) Parameter TGP6C: If the Fathead minnow NOEC<sub>S</sub> for growth is less than the critical dilution, report a "1"; otherwise, report a "0".

- (5) Parameter TPP6C: Report the Fathead minnow NOEC<sub>S</sub> value for growth.
  - (6) Parameter TQP6C: Report the highest coefficient of variation (critical dilution or control) for Fathead minnow survival and growth.
- d. The permittee shall report the following results for all VALID toxicity retests on the DMR(s) for that reporting period.
- (1) Retest #1 (STORET 22415): If the first monthly retest following failure of a routine test results in an NOEC for lethality and/or sublethality less than the critical dilution, report a "1"; otherwise, report a "0".
  - (2) Retest #2 (STORET 22416): If the second monthly retest following failure of a routine test results in an NOEC for lethality and/or sublethality less than the critical dilution, report a "1"; otherwise, report a "0".

Results of all retests shall be reported on a copy of the DMR for the reporting period (see Item 4.b above) in which the triggering routine test failure is experienced. Such retest results (using STORET codes 22415 and 22416 only) shall be submitted by no later than the 15<sup>th</sup> day of the month following completion of the retest. The full report for the retest (see Item 4.a above) shall be submitted along with the retest DMR. Even if a retest cannot be conducted before the end of the reporting period for which it is required (due to test initiation interval requirements), the retest results shall still be reported for the reporting period in which the triggering test failure is experienced. Under no circumstance shall the monitoring/reporting period dates on a supplemental retest DMR ever be altered. The permittee shall indicate the retest date in the "comments" section of the supplemental DMR and insert the date the DMR is submitted in the lower right hand corner. In this manner, both retests are reported for the same reporting period as the failed routine test triggering the retests. If retesting is not required during a given reporting period, the permittee shall leave the DMR retest fields blank.

## 5. TOXICITY REDUCTION EVALUATION (TRE)

- a. Within ninety (90) days of confirming toxicity in the retests, the permittee shall submit to the DEQ a Toxicity Reduction Evaluation (TRE) Action Plan and Schedule for conducting a TRE. The TRE Action Plan shall specify the approach and methodology to be used in performing the TRE. A Toxicity Reduction Evaluation is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The TRE Action Plan shall lead to the successful elimination of effluent toxicity at the critical dilution and include the following:
  - (1) Specific Activities. The plan shall detail the specific approach the permittee intends to utilize in conducting the TRE. The approach may include toxicity characterizations, identifications and confirmation activities, source evaluation, treatability studies, or alternative approaches. When the permittee conducts Toxicity Characterization Procedures, the permittee shall perform multiple characterizations and follow the procedures specified in the documents "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA-600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA-600/6-91/005F), or alternate procedures. When the permittee conducts Toxicity Identification Evaluations and

Confirmations, the permittee shall perform multiple identifications and follow the methods specified in the documents “Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity” (EPA/600/R-92/080) and “Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity” (EPA/600/R-92/081), as appropriate.

The DEQ requires that a thorough audit of the design, operation and maintenance of the entire plant be done at the **outset** of the TRE/TIE, rather than later in the process.

The documents referenced above may be available through the

National Technical Information Service (NTIS)

U.S. Department of Commerce  
National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22161  
1-(800) 553-6847, or at the

National Service Center for Environmental Publications (NSCEP):

U.S. EPA/NSCEP  
P.O. Box 42419  
Cincinnati, Ohio 45242-0419  
1-(800) 490-9198

E-mail: ncepimal@one.net

- (2) Sampling Plan (e.g., locations, methods, holding times, chain of custody, preservation, etc.). The effluent sample volume collected for all tests shall be adequate to perform the toxicity test, toxicity characterization, identification and confirmation procedures, and conduct chemical specific analyses when a probable toxicant has been identified. Where the permittee has identified or suspects specific pollutant(s) and/or source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical specific analyses for the identified and/or suspected pollutant(s) and/or source(s) of effluent toxicity. Where toxicity was demonstrated within 48 hours of test initiation, each composite sample shall be analyzed independently. Otherwise, the permittee may substitute a composite sample, comprised of equal portions of the individual composite samples, for the chemical specific analysis.
  - (3) Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.).
  - (4) Project Organization (e.g., project staff, project manager, consulting services, etc.).
- b. The permittee shall initiate the TRE Action Plan within thirty (30) days of plan and schedule submittal. The permittee shall assume all risks for failure to achieve the required toxicity reduction.
  - c. The permittee shall submit to the DEQ a quarterly TRE Activities Report with the Discharge Monitoring Report in months to be specified, containing information on toxicity reduction evaluation activities including:

- (1) any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;
  - (2) any studies/evaluations and results on the treatability of the facility's effluent toxicity; and
  - (3) any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant toxicity at the critical dilution.
- d. The permittee shall submit to the DEQ a Final Report on Toxicity Reduction Evaluation Activities no later than twenty-eight (28) months from confirming toxicity in the retests, which provides information pertaining to the specific control mechanism selected that will, when implemented, result in reduction of effluent toxicity to no significant toxicity at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.
- e. Quarterly testing during the TRE is a minimum monitoring requirement. The DEQ recommends that permittees required to perform a TRE not rely on quarterly testing alone to ensure success in the TRE, and that additional tests be performed to capture toxic samples for identification of toxicants. Failure to identify the specific chemical compound causing toxicity test failure will normally result in a permit limit for whole effluent toxicity per federal regulations at 40 CFR 122.44(d)(1)(v).

**MINIMUM QUANTIFICATION LEVELS (MQLs)**

| <b><u>METALS AND CYANIDE</u></b>                              | <b><u>(ug/L)</u></b> | <b><u>EPA METHOD</u></b>  |
|---|----------------------|---------------------------|
| Antimony (Total) <sup>1</sup>                                 | 60                   | 200.7                     |
| Arsenic (Total) <sup>1</sup>                                  | 10                   | 206.5                     |
|   |                      | 200.7 revision 4.4 (1994) |
|   |                      | 200.8 revision 5.4 (1994) |
|   |                      | 200.9 revision 2.2 (1994) |
| Beryllium (Total) <sup>1</sup>                                | 5                    | 200.7                     |
| Cadmium (Total)   | 1                    | 200.7 revision 4.4 (1994) |
|   |                      | 200.8 revision 5.4 (1994) |
|   |                      | 200.9 revision 2.2 (1994) |
| Chromium (Total) <sup>1</sup>                                 | 10                   | 200.7                     |
| Chromium (3+) <sup>1</sup>                                    | 10                   | 200.7                     |
| Chromium (6+) <sup>1</sup>                                    | 10                   | 200.7                     |
| Copper (Total)  | 10                   | 200.7 revision 4.4 (1994) |
|   |                      | 200.8 revision 5.4 (1994) |
|   |                      | 200.9 revision 2.2 (1994) |
| Lead (Total)  | 5                    | 200.7 revision 4.4 (1994) |
|   |                      | 200.8 revision 5.4 (1994) |
|   |                      | 200.9 revision 2.2 (1994) |
| Mercury (Total) <sup>1</sup>                                  | 0.2                  | 245.1 revision 3.0 (1994) |
| Molybdenum (Total)  | 30                   | 200.7                     |
| Nickel (Total) <sup>1</sup> [Freshwater]                      | 40                   | 200.7                     |
| Nickel (Total) [Marine]                                       | 5                    | 200.8 revision 5.4 (1994) |
|   |                      | 200.9 revision 2.2 (1994) |
| Selenium (Total) <sup>1</sup>                                 | 5                    | 200.7 revision 4.4 (1994) |
|   |                      | 200.8 revision 5.4 (1994) |
|   |                      | 200.9 revision 2.2 (1994) |
| Silver (Total)  | 2                    | 200.7 revision 4.4 (1994) |
|   |                      | 200.8 revision 5.4 (1994) |
|   |                      | 200.9 revision 2.2 (1994) |
| Thallium (Total) <sup>1</sup>                                 | 10                   | 279.2 revision            |
| Zinc (Total) <sup>1</sup>                                     | 20                   | 200.7                     |
| Cyanide (Total) <sup>1</sup>                                  | 10                   | 335.4                     |
| <b><u>DIOXIN</u></b>  |                      |                           |
| 2,3,7,8-Tetrachlorodibenzo-<br>P-Dioxin (TCDD) <sup>2,4</sup> | 0.00001              | 1613                      |
| <b><u>VOLATILE COMPOUNDS</u></b>                              |                      |                           |
| Acrolein <sup>3</sup>   | 50                   | 624                       |
| Acrylonitrile <sup>3</sup>                                    | 50                   | 624                       |
| Benzene <sup>3</sup>  | 10                   | 624                       |
| Bromoform <sup>4</sup>  | 10                   | 624                       |
| Carbon Tetrachloride <sup>4</sup>                             | 10                   | 624                       |
| Chlorobenzene <sup>4</sup>                                    | 10                   | 624                       |

**MINIMUM QUANTIFICATION LEVELS (MQLs)**

|   |    |     |
|---|----|-----|
| Chlorodibromomethane <sup>4</sup>       | 10 | 624 |
| Chloroethane                            | 50 | 624 |
| 2-Chloroethylvinyl Ether <sup>3</sup>   | 10 | 624 |
| Chloroform <sup>4</sup>                 | 10 | 624 |
| Dichlorobromomethane <sup>4</sup>       | 10 | 624 |
| 1,1-Dichloroethane <sup>4</sup>         | 10 | 624 |
| 1,2-Dichloroethane <sup>4</sup>         | 10 | 624 |
| 1,1-Dichloroethylene <sup>4</sup>       | 10 | 624 |
| 1,2-Dichloropropane <sup>4</sup>        | 10 | 624 |
| 1,3-Dichloropropylene <sup>4</sup>      | 10 | 624 |
| Ethylbenzene <sup>4</sup>               | 10 | 624 |
| Methyl Bromide [Bromomethane]           | 50 | 624 |
| Methyl Chloride [Chloromethane]         | 50 | 624 |
| Methylene Chloride <sup>4</sup>         | 20 | 624 |
| 1,1,2,2-Tetrachloroethane <sup>4</sup>  | 10 | 624 |
| Tetrachloroethylene <sup>4</sup>        | 10 | 624 |
| Toluene <sup>4</sup>                    | 10 | 624 |
| 1,2-Trans-Dichloroethylene <sup>4</sup> | 10 | 624 |
| 1,1,1-Trichloroethane <sup>4</sup>      | 10 | 624 |
| 1,1,2-Trichloroethane <sup>4</sup>      | 10 | 624 |
| Trichloroethylene <sup>4</sup>          | 10 | 624 |
| Vinyl Chloride <sup>4</sup>             | 10 | 624 |

**ACID COMPOUNDS**

|  |    |     |
|--|----|-----|
| 2-Chlorophenol <sup>4</sup>  | 10 | 625 |
| 2,4-Dichlorophenol <sup>4</sup>                                    | 10 | 625 |
| 2,4-Dimethylphenol <sup>1</sup>                                    | 10 | 625 |
| 4,6-Dinitro-o-Cresol<br>[12 methyl 4,6-dinitrophenol] <sup>4</sup> | 50 | 625 |
| 2,4-Dinitrophenol <sup>4</sup>                                     | 50 | 625 |
| 2-Nitrophenol <sup>4</sup>   | 20 | 625 |
| 4-Nitrophenol <sup>4</sup>   | 50 | 625 |
| p-Chloro-m-cresol<br>[4 chloro-3-methylphenol] <sup>1</sup>        | 10 | 625 |
| Pentachlorophenol <sup>4</sup>                                     | 50 | 625 |
| Phenol <sup>4</sup>  | 10 | 625 |
| 2,4,6-Trichlorophenol <sup>4</sup>                                 | 10 | 625 |

**BASE/NEUTRAL COMPOUNDS**

|                                    |    |     |
|------------------------------------|----|-----|
| Acenaphthene <sup>4</sup>          | 10 | 625 |
| Acenaphthylene <sup>4</sup>        | 10 | 625 |
| Anthracene <sup>4</sup>            | 10 | 625 |
| Benzidine <sup>3</sup>             | 50 | 625 |
| Benzo(a)Anthracene <sup>4</sup>    | 10 | 625 |
| Benzo(a)Pyrene <sup>4</sup>        | 10 | 625 |
| 3,4-Benzofluoranthene <sup>4</sup> | 10 | 625 |

**MINIMUM QUANTIFICATION LEVELS (MQLs)**

|  |    |     |
|--|----|-----|
| Benzo(ghi)Perylene                                   | 20 | 625 |
| Benzo(k)Fluoranthene <sup>4</sup>                    | 10 | 625 |
| Bis(2-Chloroethoxy) Methane <sup>4</sup>             | 10 | 625 |
| Bis(2-Chloroethyl) Ether <sup>4</sup>                | 10 | 625 |
| Bis(2-Chloroisopropyl) Ether <sup>4</sup>            | 10 | 625 |
| Bis(2-Ethylhexyl) Phthalate <sup>4</sup>             | 10 | 625 |
| 4-Bromophenyl Phenyl Ether <sup>4</sup>              | 10 | 625 |
| Butylbenzyl Phthalate <sup>4</sup>                   | 10 | 625 |
| 2-Chloronaphthalene <sup>4</sup>                     | 10 | 625 |
| 4-Chlorophenyl Phenyl Ether <sup>4</sup>             | 10 | 625 |
| Chrysene <sup>4</sup>                                | 10 | 625 |
| Dibenzo (a,h) Anthracene                             | 20 | 625 |
| 1,2-Dichlorobenzene <sup>4</sup>                     | 10 | 625 |
| 1,3-Dichlorobenzene <sup>4</sup>                     | 10 | 625 |
| 1,4-Dichlorobenzene <sup>4</sup>                     | 10 | 625 |
| 3,3'-Dichlorobenzidine                               | 50 | 625 |
| Diethyl Phthalate <sup>4</sup>                       | 10 | 625 |
| Dimethyl Phthalate <sup>4</sup>                      | 10 | 625 |
| Di-n-butyl Phthalate <sup>4</sup>                    | 10 | 625 |
| 2,4-Dinitrotoluene <sup>4</sup>                      | 10 | 625 |
| 2,6-Dinitrotoluene <sup>4</sup>                      | 10 | 625 |
| Di-n-octyl Phthalate <sup>4</sup>                    | 10 | 625 |
| 1,2-Diphenylhydrazine <sup>3</sup>                   | 20 | 625 |
| Fluoranthene <sup>4</sup>                            | 10 | 625 |
| Fluorene <sup>4</sup>                                | 10 | 625 |
| Hexachlorobenzene <sup>4</sup>                       | 10 | 625 |
| Hexachlorobutadiene <sup>4</sup>                     | 10 | 625 |
| Hexachlorocyclopentadiene <sup>4</sup>               | 10 | 625 |
| Hexachloroethane                                     | 20 | 625 |
| Indeno (1,2,3-cd) Pyrene<br>(2,3-o-phenylene pyrene) | 20 | 625 |
| Isophorone <sup>4</sup>                              | 10 | 625 |
| Naphthalene <sup>4</sup>                             | 10 | 625 |
| Nitrobenzene <sup>4</sup>                            | 10 | 625 |
| N-nitrosodimethylamine                               | 50 | 625 |
| N-nitrosodi-n-propylamine                            | 20 | 625 |
| N-nitrosodiphenylamine                               | 20 | 625 |
| Phenanthrene <sup>4</sup>                            | 10 | 625 |
| Pyrene <sup>4</sup>                                  | 10 | 625 |
| 1,2,4-Trichlorobenzene <sup>4</sup>                  | 10 | 625 |

**PESTICIDES**

|                        |      |     |
|------------------------|------|-----|
| Aldrin <sup>1</sup>    | 0.05 | 608 |
| Alpha-BHC <sup>1</sup> | 0.05 | 608 |

**MINIMUM QUANTIFICATION LEVELS (MQLs)**

|  |      |     |
|--|------|-----|
| Beta-BHC <sup>1</sup>  | 0.05 | 609 |
| Gamma-BHC (Lindane) <sup>1</sup>                               | 0.05 | 608 |
| Delta-BHC <sup>1</sup>   | 0.05 | 608 |
| Chlordane <sup>1</sup>   | 0.2  | 608 |
| 4,4'-DDT <sup>1</sup>  | 0.1  | 608 |
| 4,4'-DDE (p,p-DDX) <sup>1</sup>                                | 0.1  | 608 |
| 4,4'-DDD (p,p-TDE) <sup>1</sup>                                | 0.1  | 608 |
| Dieldrin <sup>1</sup>  | 0.1  | 608 |
| Alpha-endosulfan <sup>1</sup>                                  | 0.1  | 608 |
| Beta-endosulfan <sup>1</sup>                                   | 0.1  | 608 |
| Endosulfan sulfate <sup>1</sup>                                | 0.1  | 608 |
| Endrin <sup>1</sup>  | 0.1  | 608 |
| Endrin aldehyde <sup>1</sup>                                   | 0.1  | 608 |
| Heptachlor <sup>1</sup>  | 0.05 | 608 |
| Heptachlor epoxide <sup>1</sup><br>(BHC-hexachlorocyclohexane) | 0.1  | 608 |
| PCB-1242 <sup>1</sup>  | 1.0  | 608 |
| PCB-1254   | 1.0  | 608 |
| PCB-1221   | 1.0  | 608 |
| PCB-1232   | 1.0  | 608 |
| PCB-1248   | 1.0  | 608 |
| PCB-1260   | 1.0  | 609 |
| PCB-1016   | 1.0  | 608 |
| Toxaphene <sup>1</sup>   | 5.0  | 608 |

<sup>1</sup> Based on Contract Required Quantitation Level (CRQL) developed pursuant to 40 CFR Part 122

<sup>2</sup> Dioxin National Strategy

<sup>3</sup> No CRQL (Contract Required Quantification Level developed pursuant to 40 CFR Part 122) established

<sup>4</sup> CRQL basis, equivalent to MQL

MQL based on 3.3 times LOD published in 40 CFR 136, Appendix B

Methods/MQL List modified 6/20/08