



**REGION 6**  
**1445 ROSS AVENUE**  
**DALLAS, TEXAS 75202-2733**

**NPDES Permit No TX0005886**

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

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

ONEOK Hydrocarbons Southwest, L.L.C.  
P.O. Box 550  
Mont Belvieu, TX 77580

is authorized to discharge from a facility located at 9900 FM 1942, Mont Belvieu, in Chambers County, TX to Cedar Bayou above Tidal, Segment No. 0902 of Trinity – San Jacinto River Basin from approximately:

Outfall 001: Latitude 29° 50' 54" N and Longitude 94° 56' 35" W

and to unnamed ditch, thence to Cedar Bayou above Tidal, Segment No. 0902 of Trinity – San Jacinto River Basin from approximately:

Outfall 002: Latitude 29° 51' 24" N and Longitude 94° 54' 38" W

in accordance with this cover page and the effluent limitations, monitoring requirements and other conditions set forth in Part I, Part II, and III.

This permit supersedes and replaces NPDES Permit No. TX0005886 with an effective date of June 1, 2009.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Issued on

Prepared by

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William K. Honker, P.E.  
Director  
Water Quality Protection Division (6WQ)

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Tung Nguyen  
Environmental Engineer  
Permits & Technical Section (6WQ-PP)

## DOCUMENT ABBREVIATIONS

In the document that follows, various abbreviations are used. They are as follows:

BAT	Best Available Technology Economically Achievable
BOD5	Biochemical oxygen demand (five-day unless noted otherwise)
BPJ	Best professional judgment
CFR	Code of Federal Regulations
cfs	Cubic feet per second
COD	Chemical oxygen demand
COE	United States Corp of Engineers
CWA	Clean Water Act
DMR	Discharge monitoring report
ELG	Effluent limitation guidelines
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
F&WS	United States Fish and Wildlife Service
GPD	Gallon per day
IP	Procedures to Implement the Texas Surface Water Quality Standards
µg/l	Micrograms per liter (one part per billion)
mg/l	Milligrams per liter (one part per million)
MMCFD	Million cubic feet per day
MGD	Million gallons per day
MSGP	Multi-Sector General Permit
NPDES	National Pollutant Discharge Elimination System
MQL	Minimum quantification level
O&G	Oil and grease
RRC	Railroad Commission of Texas
RP	Reasonable potential
SIC	Standard industrial classification
s.u.	Standard units (for parameter pH)
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDS	Total dissolved solids
TMDL	Total maximum daily load
TOC	Total Organic Carbon
TRC	Total residual chlorine
TSS	Total suspended solids
TSWQS	Texas Surface Water Quality Standards
WET	Whole effluent toxicity
WQMP	Water Quality Management Plan
WQS	Water Quality Standard

**PART I – REQUIREMENTS FOR NPDES PERMITS****A. LIMITATIONS AND MONITORING REQUIREMENTS**

## 1. OUTFALL 001 - FINAL Effluent Limits

During the period beginning the effective date of the permit and lasting through the expiration date of the permit (unless otherwise noted), the permittee is authorized to discharge treated industrial wastewater, including filter backwash, cooling tower blowdown and equipment washdown, from Outfall 001. Such discharges shall be limited and monitored by the permittee and reported as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	MINIMUM	MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH	6.5 s.u.	9.0 s.u.	1/month	Instantaneous Grab (*3)

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	lbs/day, unless noted		mg/l, unless noted (*1)			
POLLUTANT	MONTHLY AVG.	DAILY MAX.	MONTHLY AVG.	DAILY MAX.	MEASUREMENT FREQUENCY (*2)	SAMPLE TYPE
Flow	Report MGD	Report MGD	***	***	Continuous	Totalized Meter
BOD	42	63	20	30	1/month	3-hour Composite
TSS	63	95	30	45	1/month (*8)	3-hour Composite
TRC	N/A	N/A	N/A	11 ug/l	2/month	Instantaneous Grab (*3)
Temperature, °F	N/A	N/A	Report	Report	1/month (*6)	Analyze (*7)
Aluminum, total	N/A	20.0	N/A	9.5	1/month	3-hour Composite
Copper, total	0.050	0.1	22.34 ug/l	47.27 ug/l	1/month	3-hour Composite
Selenium, total	0.03	0.06	13.23 ug/l	27.98 ug/l	1/month	3-hour Composite
Mercury, total	0.0002	0.0005	0.11 ug/l	0.23 ug/l	1/month	3-hour Composite

EFFLUENT CHARACTERISTICS	DISCHARGE MONITORING		MONITORING REQUIREMENTS	
	30-DAY AVG	7-DAY MINIMUM	MEASUREMENT FREQUENCY (*5)	SAMPLE TYPE
WHOLE EFFLUENT TOXICITY TESTING 7-DAY CHRONIC NOEC FRESHWATER (*4)				
Ceriodaphnia dubia	Report	Report	Once/6 months	24-hr Composite
Pimephales promelas	Report	Report	Once/6 months	24-hr Composite

Footnotes:

- \*1 See **Appendix A of Part II** of the permit for minimum quantification limits.
- \*2 For any reporting period, samples shall be taken at least 10 days apart.
- \*3 For instantaneous grab, sample shall be analyzed within 15 minutes of collection.
- \*4 Monitoring and reporting requirements begin on the effective date of this permit. See Part II of the permit for WET testing requirements for additional WET monitoring and reporting conditions.
- \*5 The test shall take place between November 1 and April 30. Upon failure of any WET test, the permittee must report the results to EPA and, in writing, within 5 business days of notification of the test failure.
- \*6 Data is collected in May, June, July, August, September and October.
- \*7 Temperature reading can be recorded at sample point or at blowdown from the cooling tower.
- \*8 Sampling shall be during times of filter backwashing.

## 2. OUTFALL 002 - FINAL Effluent Limits

During the period beginning the effective date of the permit and lasting through the expiration date of the permit (unless otherwise noted), the permittee is authorized to discharge industrial wastewater, including stormwater, hydrostatic test and fire hydrant water, from Outfall 002. Such discharges shall be limited and monitored by the permittee and reported as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	MINIMUM	MAXIMUM	MEASUREMENT FREQUENCY (*4)	SAMPLE TYPE
pH	6.5 s.u.	9.0 s.u.	1/event	Instantaneous Grab (*3)

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	lbs/day, unless noted		mg/l, unless noted (*1)			
	MONTHLY AVG.	DAILY MAX.	MONTHLY AVG.	DAILY MAX.	MEASUREMENT FREQUENCY (*4)	SAMPLE TYPE
Flow	Report MGD	Report MGD	***	***	1/event	Estimated (*2)
TSS	N/A	N/A	30	45	1/event	Grab
TRC	N/A	N/A	N/A	11 ug/l	1/event	Instantaneous Grab (*3)
TOC	N/A	N/A	N/A	110	1/event	Grab
Benzen	N/A	N/A	N/A	0.005	1/event	Grab
BTEX	N/A	N/A	N/A	0.1	1/event	Grab

## Footnotes:

- \*1 See **Appendix A of Part II** of the permit for minimum quantification limits.
- \*2 The flow can be estimated using best engineering judgment; e.g., calculation of discharge volume over discharge duration.
- \*3 For instantaneous grab, sample shall be analyzed within 15 minutes of collection.
- \*4 Even is defined as each occurrence of a hydrostatic test.

### 3. FLOATING SOLIDS, VISIBLE FOAM AND/OR OILS

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no discharge of visible films of oil, globules of oil, grease or solids in or on the water, or coatings on stream banks; related residue will not cause toxicity to man, aquatic life, or terrestrial life.

### 4. SAMPLING LOCATION(S) AND OTHER REQUIREMENTS

Samples taken in compliance with the monitoring requirements specified above shall be taken at the discharge from the final treatment unit prior to the receiving stream. The sample point(s) shall be clearly marked by the facility if it is not at the final outfall location. There shall be no flow from any source into the piping system after the sample point and prior to the final outfalls.

## **B. SCHEDULES OF COMPLIANCE**

The permittee shall comply with the following schedule of activities for the attainment of State water quality standards-based effluent limitations for limited parameters: Temperature, Copper, Selenium, Mercury and BTEX:

- Determine exceedance cause(s);
- Develop control options, if needed;
- Evaluate and select control mechanisms;
- Implement corrective action; and
- Attain final effluent limitations for those parameters specified above no later **6 months** from the permit effective date.

The permittee shall submit quarterly progress reports, to both EPA and Texas Railroad Commission, in accordance with the following schedule. The requirement to submit quarterly progress reports the pollutants shall be **6 months** from the permit effective date. No later than 14-days after the date compliance with the parameters final limits have been met, the permittee shall submit a written final report both to EPA and the State Agency, stating that compliance has been completed. If at any time during the compliance periods the permittee determines that full compliance will not be met within the time allowed, a separate report shall be sent to both EPA and the State Agency stating the explanation for this delay and proposed remedial actions.

PROGRESS REPORT DATES: January 30, April 30, July 30 and October 30.

The permittee should note that each date applies to the prior three month period and shall send progress and final reports to the following addresses:

EPA  
Compliance Assurance and Enforcement Division  
Water Enforcement Branch (6EN-W)  
U.S. EPA, Region 6  
1445 Ross Avenue  
Dallas, TX 75202-2733

Railroad Commission of Texas  
Oil & Gas Division  
ATTN: Program Manager  
1701 North Congress Avenue  
Environmental Services Section  
P.O. Box 12967  
Austin, TX 78711- 12967

## **C. MONITORING AND REPORTING**

- Monitoring results must be reported to EPA on either the electronic or paper Discharge Monitoring Report (DMR) approved formats. Monitoring results can be submitted electronically in lieu of the paper DMR Form. To submit electronically, access the NetDMR website at [www.epa.gov/netdmr](http://www.epa.gov/netdmr) and contact the [R6NetDMR@epa.gov](mailto:R6NetDMR@epa.gov) in-box for further instructions. Until you are approved for Net DMR, you must report on the Discharge Monitoring Report (DMR) Form EPA No. 3320-1 in accordance with the "General Instructions" provided on the form. No additional copies are needed if reporting electronically, however when submitting paper form EPA No. 3320-1, the permittee shall submit the original DMR signed and certified as required by Part III.D.11 and all other reports required by Part III.D. to the EPA and other agencies as required. (See Part III.D.IV of the permit.)
- Discharge Monitoring Report Form(s) shall be submitted quarterly. Each quarterly submittal shall include separate forms for each month of the reporting period.
- Reporting periods shall end on the last day of the months March, June, September, and December.
- The first Discharge Monitoring Report(s) shall represent facility operations from the effective date of the permit through the last day of the current reporting period.
- Thereafter, the permittee is required to submit regular quarterly reports as described above and shall submit those reports postmarked no later than the 28th day of the month following each reporting period.
- NO DISCHARGE REPORTING - If there is no discharge from any outfall during the sampling month, place an "X" in the NO DISCHARGE box located in the upper right corner of the Discharge Monitoring Report.
- If any daily maximum or monthly average value exceeds the effluent limitations specified in Part I. A, the permittee shall report the excursion in accordance with the requirements of Part III. D.
- Any daily maximum or monthly average value reported in the required Discharge Monitoring Report which is in excess of the effluent limitation specified in Part I. A shall constitute evidence of violation of such effluent limitation and of this permit.
- The permittee shall effectively monitor the operation and efficiency of all treatment and control facilities and the quantity and quality of the treated discharge.
- All reports shall be sent both to EPA and the Texas Railroad Commission at the addresses shown in Part III of the permit.

#### **D. WATER TREATMENT CHEMICAL PROHIBITION**

Products containing chromium and zinc will be prohibited from use as additives to the utility waters.

**PART II - OTHER CONDITIONS****A. MINIMUM QUANTIFICATION LEVEL (MQL)**

See list of MQL's at Appendix A of Part II below. For pollutants listed on Appendix A of Part II with MQL's, analyses must be performed to the listed MQL. If any individual analytical test result is less than the MQL listed, a value of zero (0) may be used for that pollutant result for the Discharge Monitoring Report (DMR) calculations and reporting requirements.

In addition, any additional pollutant sampling for purposes of this permit, including renewal applications or any other reporting, shall be tested to the MQL shown on the attached Appendix A of Part II. Results of analyses that are less than the listed MQL may be reported as "non detect" (ND).

**B. 24-HOUR ORAL REPORTING: DAILY MAXIMUM LIMITATION VIOLATIONS**

Under the provisions of Part III.D.7.b.(3) of this permit, violations of daily maximum limitations for the following pollutants shall be reported orally to EPA Region 6, Compliance and Assurance Division, Water Enforcement Branch (6EN-W), Dallas, Texas, at (214) 665-6595, and concurrently to Railroad Commission of Texas, at (512) 463-6804, within 24 hours from the time the permittee becomes aware of the violation followed by a written report in five days.

Aluminum, Copper, Selenium, Mercury, Benzen and BTEX.

**C. PERMIT MODIFICATION AND REOPENER**

The permit may be reopened and modified during the life of the permit if relevant portions of the Texas Commission on Environmental Quality (TCEQ) Water Quality Standards for Interstate and Intrastate Streams are revised or remanded. In addition, the permit may be reopened and modified during the life of the permit if relevant procedures implementing the Water Quality Standards are either revised or promulgated by the TCEQ. Should the State adopt a State water quality standard, this permit may be reopened to establish effluent limitations for the parameter(s) to be consistent with that approved State standard in accordance with 40CFR122.44 (d). Modification of the permit is subject to the provisions of 40CFR124.5.

If a new or revised TMDL is determined for the receiving stream, the permit may be reopened, and new limitations based on the TMDL may be incorporated into the permit.

Additionally, in accordance with 40 CFR Part 122.62 (s) (2), the permit may be reopened and modified if new information is received that was not available at the time of permit issuance that would have justified the application of different permit conditions at the time of permit issuance. Permit modifications shall reflect the results of any of these actions and shall follow regulations listed at 40 CFR Part 124.5.

**D. STORM WATER POLLUTION PREVENTION**

1. Stormwater has been identified by the applicant/permittee as a component of the discharge through Outfall 002. This section applies to all stormwater discharges from the facility through permitted outfalls. The language below has been included in this permit to control stormwater from the facility subject to NPDES regulation:



The permittee shall prepare, implement, and maintain a Storm Water Pollution Prevention Plan (SWP3) within six (6) months of the effective date of the final permit. The terms and conditions of the SWP3 shall be an enforceable Part of the permit.

2. A visual inspection of the facility shall be conducted and a report made annually as described in Paragraphs E.2.d and E.2.e below. The annual report shall be retained on site and available upon request.

The following conditions shall be included in the SWP3 for this facility.

- a. The permittee shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the facility; describe and ensure implementation of practices which will be used to reduce pollutants in storm water discharges from the facility; and assure compliance with the terms and conditions of this permit.
- b. The permittee must document where potential spills and leaks could occur that could contribute pollutants to stormwater discharges, and the corresponding outfall(s). The permittee must document all significant spills and leaks of oil or toxic or hazardous pollutants that actually occurred at exposed areas, or that drained to a stormwater conveyance, in the 3 years prior to the date you prepare or amend your SWPPP.

Note: Significant spills and leaks include, but are not limited to, releases of oil or hazardous substances in excess of quantities that are reportable under CWA Section 311 (see 40 CFR 110.6 and 40 CFR 117.21) or Section 102 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC §9602. This permit does not relieve you of the reporting requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302 relating to spills or other releases of oils or hazardous substances.

- c. Where experience indicates a reasonable potential for equipment failure (e.g. a tank overflow or leakage), natural conditions e.g. precipitation, or other circumstances which result in significant amounts of pollutants reaching surface waters, the SWP3 should include a prediction of the direction, rate of flow and total quantity of pollutants which could be discharged from the facility as a result of each condition or circumstance.
- d. The permittee shall maintain for a period of three years a record summarizing the results of the inspection and a certification that the facility is in compliance with the SWP3 and the permit, and identifying any incidents of noncompliance. The summary report should contain, at a minimum, the date and time of inspection, name of inspectors(s), conditions found, and changes to be made to the SWP3.
- e. The summary report and the following certification shall be signed and attached to the SWP3 and provided to the Environmental Protection Agency and the Railroad Commission of Texas upon request.

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the

information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Signatory requirements for the certification may be found in Part III, Section D.11 of this permit.

- f. The permittee shall make available to the Agency, the Railroad Commission of Texas, and/or the USFWS, upon request, a copy of the SWP3 and any supporting documentation.
3. The following shall be included in the SWP3, if applicable.
- a. The permittee shall utilize all reasonable methods to minimize any adverse impact on the drainage system including but not limited to:
    - ✓ maintaining adequate road and driveway surfaces;
    - ✓ removing debris and accumulated solids from the drainage system; and
    - ✓ cleaning up prior to the next storm event, any spill by sweeping, absorbent pads, or other appropriate methods.
  - b. All spilled product and other spilled wastes shall be immediately cleaned up and disposed of according to all applicable regulations, Spill Prevention and Control (SPC) plans or Spill Prevention Control and Countermeasures (SPCC) plans. Use of detergents, emulsifiers, or dispersants to clean up spilled product is prohibited except where necessary to comply with State or Federal safety regulations (i.e., requirement for non-slippery work surface). In all such cases, initial cleanup shall be done by physical removal and chemical usage shall be minimized.
  - c. All equipment, parts, dumpsters, trash bins, petroleum products, chemical solvents, detergents, or other materials exposed to stormwater shall be maintained in a manner which prevents contamination of stormwater by pollutants.
  - d. All waste fuel, lubricants, coolants, solvents, or other fluids used in repair or maintenance of vehicles or equipments shall be recycled or contained for proper disposal. Spills of these materials are to be cleaned up by dry means whenever possible.
  - e. Stormwater Pollution Prevention Plan must be consistent with the requirements of the current Oil Pollution Prevention regulations.
  - f. Prior to discharge of uncontaminated stormwater from a secondary containment area, the permittee will conduct a visual inspection of the containment area for a visible sheen, an odor associated within the tanked products, and/or a stain pattern within the contained area that is indicative of a spill or leak into that area. No dewatering of the area is allowed under the condition of this permit, if evidence exists of a spill or leak, unless the discharge will not exceed 50 mg/l TOC, 15 mg/l Oil and Grease, or having a pH less than 6.0 or greater than 9.0 standard units.
  - g. The permittee shall assure compliance with all applicable regulations promulgated under 40 CFR Part 257. Management practices required under regulations found in this Part shall be referenced in the SWP3.

- h. The permittee shall amend the SWP3 whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.
- i. If the SWP3 proves to be ineffective in achieving the general objectives preventing the release of significant amounts of pollutants to water of the state, then the specific objectives and requirements of the SWP3 shall be subject to modification to incorporate revised SWP3 requirements.

**E. WHOLE EFFLUENT TOXICITY TESTING (7-DAY CHRONIC NOEC FRESHWATER)**

*It is unlawful and a violation of this permit for a permittee or his designated agent, to manipulate test samples in any manner, to delay sample shipment, or to terminate or to cause to terminate a toxicity test. Once initiated, all toxicity tests must be completed unless specific authority has been granted by EPA Region 6 or the State NPDES permitting authority.*

**1. SCOPE AND METHODOLOGY**

- a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section.

APPLICABLE TO FINAL OUTFALL(S):	001
REPORTED ON DMR AS FINAL OUTFALL:	001
EFFLUENT DILUTION SERIES:	18%, 24%, 32%, 42%, and 56%
CRITICAL DILUTION:	42%
COMPOSITE SAMPLE TYPE:	Defined at PART I
TEST SPECIES/METHODS:	40 CFR Part 136

Ceriodaphnia dubia chronic static renewal survival and reproduction test, Method 1002.0, EPA 821 R 02 013, or the most recent update thereof. 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.

Pimephales promelas (Fathead minnow) chronic static renewal 7-day larval survival and growth test, Method 1000.0, EPA 821 R 02 013 or the 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. The NOEC (No Observed Lethal Effect Concentration) is herein defined as the greatest effluent dilution at and below which lethality that is statistically different from the control (0% effluent) at the 95% confidence level does not occur. Chronic lethal test failure is defined as a demonstration of a statistically significant lethal effect at test completion to a test species at or below the critical dilution. Chronic sub-lethal test failure is defined as a demonstration of a statistically significant sub-lethal effect (i.e., growth or reproduction) at test completion to a test species at or below the critical dilution.
- c. 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. PERSISTENT LETHAL and/or SUB-LETHAL EFFECTS**

The requirements of this subsection apply only when a toxicity test demonstrates significant lethal and/or sub-lethal effects at or below the critical dilution. The purpose of additional tests

(also referred to as 'retests' or confirmation tests) is to determine the duration of a toxic event. A test that meets all test acceptability criteria and demonstrates significant toxic effects does not need additional confirmation. Such testing cannot confirm or disprove a previous test result.

If any valid test demonstrates significant lethal or sub-lethal effects to a test species at or below the critical dilution, the frequency of testing for that species is automatically increased to once per quarter for the life of the permit.

a. Part I Testing Frequency Other Than Monthly

- The permittee shall conduct a total of three (3) additional tests for any species that demonstrates significant toxic effects at or below the critical dilution. The additional tests shall be conducted monthly during the next three consecutive months. If testing on a quarterly basis, the permittee may substitute one of the additional tests in lieu of one routine toxicity test. A full report shall be prepared for each test required by this section in accordance with procedures outlined in Item 4 of this section and submitted with the period discharge monitoring report (DMR) to the permitting authority for review.
- **IF LETHAL EFFECTS HAVE BEEN DEMONSTRATED** If any of the additional tests demonstrates significant lethal effects at or below the critical dilution, the permittee shall initiate Toxicity Reduction Evaluation (TRE) requirements as specified in Item 5 of this section. The permittee shall notify EPA in writing within 5 days of the failure of any retest, and the TRE initiation date will be the test completion date of the first failed retest. A TRE may be also required due to a demonstration of intermittent lethal effects at or below the critical dilution, or for failure to perform the required retests.
- **IF ONLY SUB-LETHAL EFFECTS HAVE BEEN DEMONSTRATED** If any two of the three additional tests demonstrates significant sub-lethal effects at 75% effluent or lower, the permittee shall initiate the Sub-Lethal Toxicity Reduction Evaluation (TRESL) requirements as specified in Item 5 of this section. The permittee shall notify EPA in writing within 5 days of the failure of any retest, and the Sub-Lethal Effects TRE initiation date will be the test completion date of the first failed retest. A TRE may be also required for failure to perform the required retests.
- The provisions of Item 5.a.i. are suspended upon submittal of the TRE Action Plan.

b. Part I Testing Frequency of Monthly

The permittee shall initiate the Toxicity Reduction Evaluation (TRE) requirements as specified in Item 5 of this section when any two of three consecutive monthly toxicity tests exhibit significant lethal effects at or below the critical dilution. A TRE may also be required due to a demonstration of intermittent lethal and/or sub-lethal effects at or below the critical dilution, or for failure to perform the required retests.

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:

- The toxicity test control (0% effluent) must have survival equal to or greater than 80%.
- The mean number of Ceriodaphnia dubia neonates produced per surviving female in the control (0% effluent) must be 15 or more.
- 60% of the surviving control females must produce three broods.
- 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.
- 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; the growth and survival endpoints of the Fathead minnow test.
- The percent coefficient of variation between replicates shall be 40% or less in the critical dilution, unless significant lethal or nonlethal effects are exhibited for: the young of surviving females in the Ceriodaphnia dubia reproduction test; the growth and survival endpoints of the Fathead minnow test.
- A PMSD range of 13 - 47 for Ceriodaphnia dubia reproduction;
- A PMSD range of 12 - 30 for Fathead minnow growth.

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 required reporting period of any test determined to be invalid.

b. Statistical Interpretation

- 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 the most recent update thereof.
- For the Ceriodaphnia dubia reproduction test and 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 the most recent update thereof.
- 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 a survival NOEC of not less than the critical dilution for the DMR reporting requirements found in Item 4 below.

## c. Dilution Water

- 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 for;
  - toxicity tests conducted on effluent discharges to receiving water classified as intermittent streams; and
  - toxicity tests conducted on effluent discharges where no receiving water is available due to zero flow conditions.
- 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 may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:
  - a synthetic dilution water control which fulfills the test acceptance requirements of Item 3.a was run concurrently with the receiving water control;
  - the test indicating receiving water toxicity has been carried out to completion (i.e., 7 days);
  - the permittee includes all test results indicating receiving water toxicity with the full report and information required by Item 4 below; and
  - the synthetic dilution water shall have 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

- The permittee shall collect a minimum of three flow-weighted composite samples from the outfall(s) listed at Item 1.a above.
- The permittee shall collect second and third composite samples for use during 24-hour renewals of each dilution concentration for each test. The permittee must collect the 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.
- The permittee must collect the composite samples so that the maximum holding time for any effluent sample shall not exceed 72 hours. The permittee must have initiated the toxicity test within 36 hours after the collection of the last portion of the first composite sample. Samples shall be chilled to 6 degrees Centigrade during collection, shipping, and/or storage.

- If the flow from the outfall(s) being tested ceases during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions and the sample holding time are waived during that sampling period. However, the permittee must collect an effluent composite sample volume during the period of discharge that is sufficient to complete the required toxicity tests with daily renewal of effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The effluent composite sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report required in Item 4 of this section.

#### 4. REPORTING

- a. The permittee shall prepare a full 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, or the most current publication, for every valid or invalid toxicity test initiated whether carried to completion or not. The permittee shall retain each full report pursuant to the provisions of PART III.C.3 of this permit. The permittee shall submit full reports upon the specific request of the Agency. For any test which fails, is considered invalid or which is terminated early for any reason, the full report must be submitted for agency review.
- b. A valid test for each species must be reported during 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. Only ONE set of biomonitoring data for each species is to be recorded for each reporting period. The data submitted should reflect the LOWEST lethal and sub-lethal effects results for each species during the reporting period. All invalid tests, repeat tests (for invalid tests), and retests (for tests previously failed) performed during the reporting period must be attached for EPA review.
- c. The permittee shall submit the results of each valid toxicity test as follows below. Submit retest information, if required, clearly marked as such. Only results of valid tests are to be reported.
  - Pimephales promelas (Fathead Minnow)
    - If the No Observed Effect Concentration (NOEC) for survival is less than the critical dilution, enter a '1'; otherwise, enter a '0' for Parameter No. TLP6C
    - Report the NOEC value for survival, Parameter No. TOP6C
    - Report the LOEC value for survival, Parameter No. TXP6C
    - Report the NOEC value for growth, Parameter No. TPP6C
    - Report the LOEC value for growth, Parameter No. TYP6C
    - If the No Observed Effect Concentration (NOEC) for growth is less than the critical dilution, enter a '1'; otherwise, enter a '0' for Parameter No. TGP6C



- Report the highest (critical dilution or control) Coefficient of Variation, Parameter No. TQP6C
- Ceriodaphnia dubia
  - If the NOEC for survival is less than the critical dilution, enter a '1'; otherwise, enter a '0' for Parameter No. TLP3B
  - Report the NOEC value for survival, Parameter No. TOP3B
  - Report the LOEC value for survival, Parameter No. TXP3B
  - Report the NOEC value for reproduction, Parameter No. TPP3B
  - Report the LOEC value for reproduction, Parameter No. TYP3B
  - If the No Observed Effect Concentration (NOEC) for reproduction is less than the critical dilution, enter a '1'; otherwise, enter a '0' for Parameter No. TGP3B
  - Report the higher (critical dilution or control) Coefficient of Variation, Parameter No. TQP3B

d. enter the following codes on the DMR for **retest** only:

- For retest number 1, Parameter 22415, enter a '1' if the NOEC for survival is less than the critical dilution; otherwise, enter a '0'
- For retest number 2, Parameter 22416, enter a '1' if the NOEC for survival is less than the critical dilution; otherwise, enter a '0'

## 5. TOXICITY REDUCTION EVALUATIONS (TREs)

TREs for lethal and sub-lethal effects are performed in a very similar manner. EPA Region 6 is currently addressing TREs as follows: a sub-lethal TRE (TRESL) is triggered based on three lethal and/or sub-lethal test failures while a lethal effects TRE (TREL) is triggered based on only two test failures for lethality. In addition, EPA Region 6 will consider the magnitude of toxicity and use flexibility when considering a TRESL where there are no effects at effluent dilutions of less than 76% effluent.

- a. Within ninety (90) days of confirming persistent toxicity, the permittee shall submit 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 goal of the TRE is to maximally reduce the toxic effects of effluent at the critical dilution and includes the following:

- 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 documents referenced above may be obtained through the National Technical Information Service (NTIS) by phone at (703) 487-4650, or by writing:

U.S. Department of Commerce  
National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22161

- 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 lethality 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;

- Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.); and
  - 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 a quarterly TRE Activities Report, with the Discharge Monitoring Report in the months of January, April, July and October, containing information on toxicity reduction evaluation activities including:
- any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;
  - any studies/evaluations and results on the treatability of the facility's effluent toxicity; and
  - any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution.

A copy of the TRE Activities Report shall also be submitted to the state agency.

- d. The permittee shall submit a Final Report on Toxicity Reduction Evaluation Activities no later than twenty-eight (28) months from confirming lethality 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 lethality at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism. A copy of the Final Report on Toxicity Reduction Evaluation Activities shall also be submitted to the state agency.
- e. Quarterly testing during the TRE is a minimum monitoring requirement. EPA recommends that permittees required to perform a TRE not rely on quarterly testing alone to ensure success in the TRE, and that additional screening 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 limits per federal regulations at 40 CFR 122.44(d)(1)(v).

## 6. MONITORING FREQUENCY REDUCTION

- a. The permittee may apply for a testing frequency reduction upon the successful completion of the first four consecutive quarters of testing for one or both test species, with no lethal effects demonstrated at or below the critical dilution. If granted, the monitoring frequency for that test species may be reduced to not less than once per year for the less sensitive species (usually the Fathead minnow) and not less than twice per year for the more sensitive test species (usually the *Daphnia pulex*).
- b. **CERTIFICATION** - The permittee must certify in writing that no 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 list with each test performed including test initiation date, species, NOECs for lethal effects and the maximum coefficient of variation for the controls. Upon review and acceptance of this information the agency will issue a letter of confirmation of the monitoring frequency reduction. A copy of the letter will be forwarded to the agency's Permit Compliance System section to update the permit reporting requirements.
- c. **SURVIVAL FAILURES** - If any test fails the survival endpoint at any time during the life of this permit, three monthly retests are required and the monitoring frequency for the affected

test species shall be increased to once per quarter until the permit is re-issued. Monthly retesting is not required if the permittee is performing a TRE.

- d. This monitoring frequency reduction applies only until the expiration date of this permit, at which time the monitoring frequency for both test species reverts to once per quarter until the permit is re-issued.