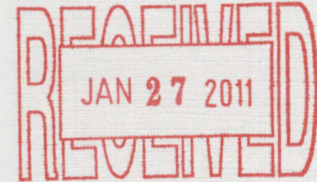




CHEMICAL COMPANY

January 25, 2011

Mary Barnett, Water Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR. 72118



RE: Revised TRE Plan for EDCC Outfalls 006 and 007
NPDES Permit No. AR 0000752 & AFIN 70-00040

Dear Ms. Barnett:

Attached to this cover letter is the revised TRE plan for storm water Outfalls 006 and 007 as requested in your letter dated January 14, 2011. The revised plan addresses those items specified in the attachment to that letter.

EDCC intends to implement the TRE in accordance with the revised schedule.

Please do not hesitate to contact me (870) 863-1484 or Roland McDaniel (501) 847-7077 should you have questions or require additional information regarding the TRE Plan.

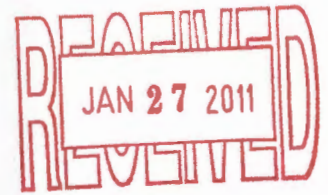
Respectfully Submitted,

A handwritten signature in cursive script that reads "David Sartain".

David Sartain, EDCC

Attachments

ECC: Cindy Garner, ADEQ NPDES Enforcement -w- Attachment
Chuck Nestrud CN&J -w- Attachment
Greg Withrow, EDCC General Manager w/o Attachment
John Carver, LSB Industries w/o Attachment
Roland McDaniel, GBMc & Associates w/o Attachment



**El Dorado Chemical Company
Storm Water TRE Plan
Outfalls 006 & 007**

January 25, 2011-rev. 2

Storm Water TRE Plan

EDCC Outfalls 006 & 007

Prepared for:

El Dorado Chemical Company
4500 Northwest Ave
El Dorado, Arkansas

Prepared by:

GBM^c & Associates
219 Brown Lane
Bryant, AR 72022

January 25, 2011-rev.2

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FIGURE

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ATTACHMENT

Attachment – Outfall 006 and 007 WET Test Results from Working Version of Pre-draft NPDES AR0000752 (Pages 83-90 of Fact Sheet)	
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1.0 INTRODUCTION

El Dorado Chemical Company (EDCC) (**Figure 1**) was issued a modified National Pollutant Discharge Elimination System (NPDES) permit AR0000752 effective on June 1, 2004 for discharge from multiple outfalls, including storm water Outfalls 006 and 007. As a condition of the permit modification, the facility was required to conduct 48-hour acute Whole Effluent Toxicity (WET) on a per discharge basis and report the results of the WET tests. Although Outfall 006 and 007 are storm water discharges only, the critical dilution for the acute test was established as 100% effluent and has continued as the reportable critical dilution to date. Since September 2004, EDCC has completed WET testing on discharges through Outfalls 006 and 007.

In addition to the routine WET testing, EDCC was required to complete a flow study to document the flows resulting from storm events at the point of exit from the EDCC property. The objective of the flow study was to document the contributions of the discharge through Outfalls 006 and 007 to the total discharge within the watershed as the flow exited EDCC property. This study was completed during the 15-month period from March 2, 2005 to June 17, 2006. The downstream flow study was submitted to ADEQ on or about September 21, 2006. Based on the documentation provided in this report the background flow to discharge ratio for Outfall 006 was determined to be 56:1 and for Outfall 007 the ratio was 15:1. Based on these ratios the discharge from Outfall 006 contributes approximately 1.8% of the instream flow during storm event flows and Outfall 007 contributes approximately 6.7 % of the instream flow.

In order to account for a zone of initial dilution (ZID) and applying the regulatory mixing zones as provided in Reg. No 2 using the Arkansas' Continuous Planning Process (CPP) for implementation, these ratios result in a regulatory critical dilution of 22% for Outfall 006 and 50% for Outfall 007. The application of the mixing zone adds an additional level of conservative protection when applying the WET testing monitoring requirements to the discharge limitations for the storm water discharges. In the proposed draft permit renewal, ADEQ confirmed that the critical dilutions for Outfall 006 and 007 were 22% and 50%, respectively (See Page 84 of Fact Sheet and pages 10 and 14 of part 1A of the working version of the PRE-DRAFT NPDES AR0000752, AFIN: 70-00040 document) (**Attachment 1**). However, due to other permitting issues related to the resolution of the joint pipeline and discharge 010, the revised critical dilutions have not yet been incorporated into EDCCs NPDES permit.

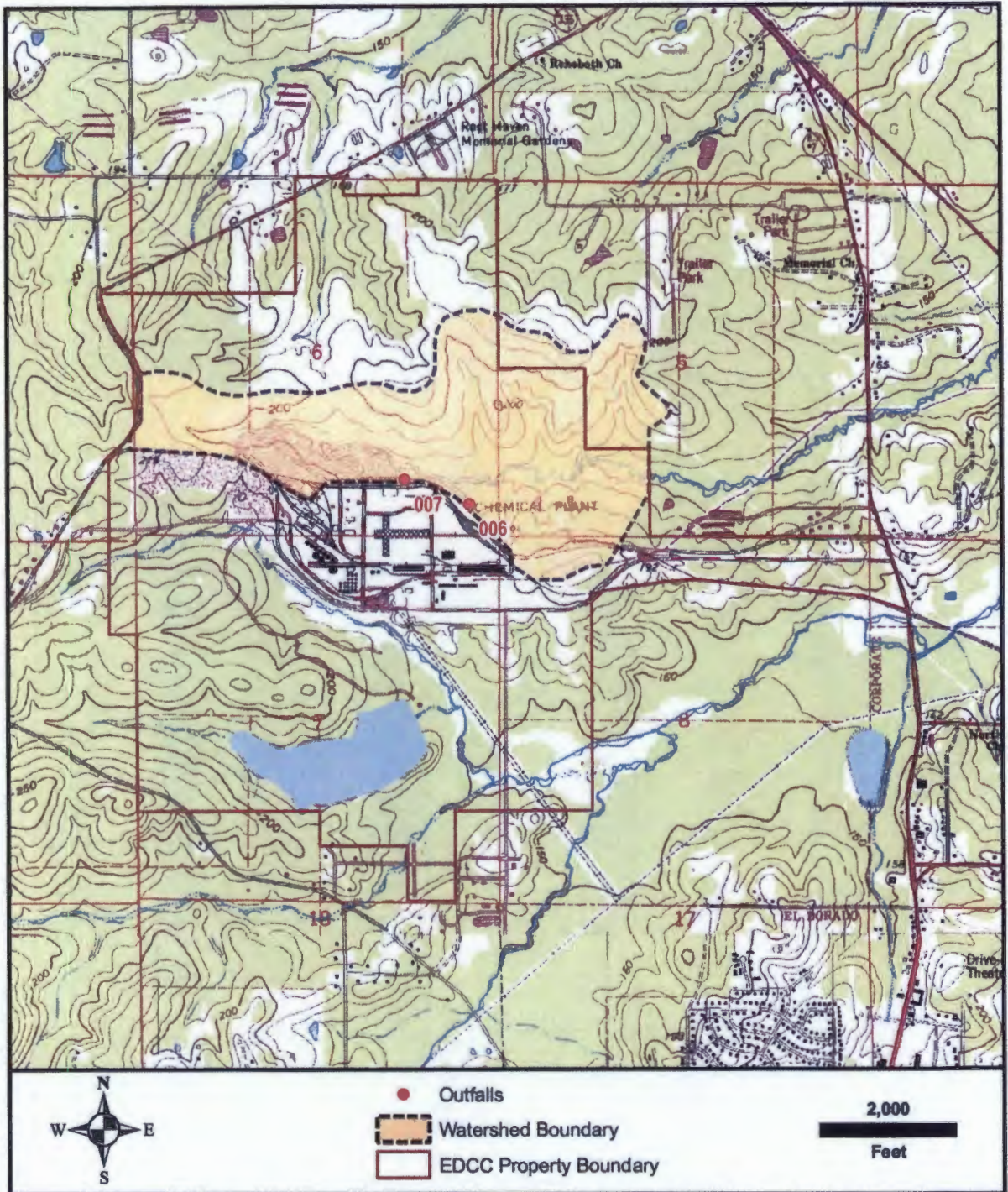


Figure 1. EDCC Storm Water Discharge Monitoring Locations (006 and 007).

The current NPDES permit (Part III, Other Conditions) requires that EDCC take actions to address any consistent and significant storm water WET test failures in 100% effluent (although ADEQ recognizes the appropriate storm water critical dilutions are 22% and 50% for Outfalls 006 and 007, respectively).

This Toxic Reduction Evaluation (TRE) Action Plan complies with that section of the existing NPDES permit.

2.0 STUDY OBJECTIVE

The Outfall 006 and Outfall 007 (Storm Water) TRE Plan objectives are to:

1. Evaluate the cause of the acute WET test failures to the water flea and/or fathead minnow in WET tests in the laboratory 48-hour acute tests on effluent from Outfall 006 and Outfall 007; and
2. Identify, where possible, and correct the cause of any significant and consistent failures of the acute WET tests completed on storm water effluent from Outfall 006 and Outfall 007.

The storm water TRE will combine routine WET testing and analyses of the physical and chemical characteristics of the storm water effluents to determine, to the extent possible and as appropriate, a cause of WET test failures of the water flea and/or the fathead minnow in the storm water discharges from Outfall 006 and Outfall 007. Since the flow study documented that the appropriate critical dilutions are 22% and 50% for Outfalls 006 and 007, respectively, these critical dilutions will be the target for the storm water TRE. In addition, any available historical data will be evaluated during the TRE study period. The findings of the study will be submitted to ADEQ at the conclusion of the TRE study period.

Should the cause of the acute WET test failures be identified as a result of current facility operations and/or the current water management operations, the final report will provide a Compliance Plan defining subsequent actions to increase WET test performance as measured by the routine monitoring requirements.

3.0 BACKGROUND

EDCC has completed 48-hour acute WET tests since before September 2005. The historical record presented in the draft NPDES permit (working pre-draft) provides results since September 2005. During that period, EDCC had completed 53 WET tests on discharges from Outfall 006, passing 51 (96%) of the fathead minnow WET tests with No Observed Effect Concentrations (NOEC)s greater than 32% and passing 40 (75%) of the water flea WET tests with NOECs greater than 32%.

During the last 3 year period (2008-2010), there have been no WET test failures for either species at or below the ADEQ proposed critical dilutions of 22% (Outfall 006) or 50% (Outfall 007). During the same recent 3 year period, there have been isolated WET test failures with NOECs above the ADEQ proposed critical dilution for Outfall 006 (22%). These failures include two fathead minnow tests (December 2008 and July 2009 with NOECs of 75%) and two water flea tests (January 2008 and July 2009 with NOEC of 56 and 75%, respectively). All four of the WET tests reported as failed during the past 3 year period were reported as failures based on a critical dilution of 100%. The application of the 100% critical dilution to storm water Outfalls 006 and 007 has since been determined inappropriate as demonstrated by the proposed critical dilution supported by ADEQ in the current pre-draft permit renewal.

The storm water test failures have not been consistent. Although the June and August water flea WET tests failed at the critical dilution of 100% effluent during 2010, there is no documentation that the failures would have persisted in the 22% critical dilution proposed and supported by the ADEQ in the pre-draft NPDES renewal and based on the EDCC flow study (Note: The June and August 2010 *Daphnia pulex* WET tests were not completed with a dilution series due to lack of organisms. However, the June and August 2010 WET test passed the fathead minnow 100% effluent exposure).

During the same period (September 2005-August 2010), there were 52 (fathead minnow) and 51 (water flea) acute WET tests completed on discharges from Outfall 007 where the critical dilution of record was 100% effluent rather than the 50% effluent as proposed in draft permit (working draft). During the five year period, 45 of the 52 (88%) fathead minnow tests reported a NOEC greater than 50%, and 44 of 51 (86%) of the water flea tests passed with NOEC greater than 50% effluent. Since August 2010, EDCC has completed an additional three acute test on effluents from Outfall 007, 2 of 3 have passed with NOEC greater than 50% with

only the October test failing with a NOEC of less than 50% effluent. Also, there have been no WET test failures from Outfall 007 above the 50% critical dilution (proposed by ADEQ in the pre-draft NPDES permit renewal) since February 2008, except October 2010 (Note: There was a single WET test failure in November 2008, however, the NOEC was 65%, larger than the 50% critical dilution proposed by ADEQ in the pre-draft NPDES renewal).

Therefore, given the record for the WET test results for the fathead minnow (*Pimephales promelas*) as summarized in the Fact Sheet of the draft NPDES permit, the storm water TRE proposes to evaluate the water flea only unless changes in the routine WET testing indicates consistent failures of the test endpoint (lethality) at or below the critical dilutions (e.g. 22% for Outfall 006 and 50% for Outfall 007) proposed by ADEQ in the pre-draft NPDES renewal. However, in order to verify that any proposed modifications will also support the fathead minnow, the final confirmation will include an assessment of the storm water performance of the fathead minnow.

4.0 WET ASSESSMENT and TRE APPROACH

4.1 Routine WET Testing

As required by the NPDES permit, 48-hour WET testing will continue through the storm water TRE study period. The critical dilution for routine reporting of Outfalls 006 and 007 will be 100% despite the proposed modifications in the draft permit renewal. The critical dilutions for the TRE will be 22% and 50% for Outfalls 006 and 007, respectively. The dilutions series for the TRE will be 9%, 12%, 17%, 22%, and 29% for Outfall 006, and for Outfall 007 the dilution series will be 21%, 28%, 38%, 50%, and 67%. In addition, to these prescribed dilution series, the TRE will evaluate the discharges using 100% effluent as appropriate. The results of WET tests will be evaluated for adherence to analytical chemistry, test acceptance criteria, and reference toxicity results evaluating the condition of the organism cultures.

4.2. WET Test Failures in Outfalls 006 and 007 Discharge

Due to the historically inconsistent results demonstrating sporadic and variability in level of significance with the storm water test failures, one or more storm water toxicity identification evaluations (TIE) will be designed and implemented on effluents from Outfall 006 and/or 007 should

consecutive storm water effects be demonstrated in effluent concentrations less than 22% for Outfall 006 and less than 50% for Outfall 007 effluent.

Initially, TIE actions will be directed at the water flea only. However, should the routine fathead minnow WET test exhibit consistent and significant WET tests failures, TIE manipulations will be implemented in an effort to identify the cause of the fathead minnow WET test failures. This approach is proposed based on the standard TRE language now being utilized in ADEQ NPDES permits as provided below in the excerpt from standard NPDES language defining the application of Whole Effluent Toxicity Limits.

4.3 TRE Tasks

The acute TRE will be completed to provide information to adequately address:

- 1) identification of the toxicant(s) or group of toxicants(s) that cause the failures of the storm water WET tests;
- 2) as possible, identification of the most likely source(s) of the cause for the acute test failures,
- 3) results of treatability investigation, if required,
- 4) an evaluation of alternatives, either treatment or source reduction,
- 5) identification of preferred alternatives to reduce storm water test failures allowing compliance with storm water WET permit requirements, and
- 6) a proposed schedule for compliance.

This will be accomplished by conducting a step-wise program of investigation that includes evaluation of facility practices and chemical usage, toxicity testing and analyses of physical/chemical effluent characteristics.

4.4 TRE Approach

The basic approach to achieve the storm water TRE objectives is outlined in the following sections. Sound scientific judgment will be employed at each step of the process. Given the historical WET testing results where the water flea has sporadically failed the WET testing acute endpoint and the fathead minnow has demonstrated little potential for acute test failures, the focus of the TRE/TIE investigations will be the water flea.

Also, given the historical data, each specific activity may not be conducted in the order presented in this plan, nor will each activity necessarily be conducted if determined to be

unnecessary to reach the TRE objectives. Furthermore, based on the facility history, it is possible that the storm water WET failures exhibited historically will not be demonstrated at times during the initial identification and characterization. Should this occur, TRE activities would be suspended and the facility would return to monitoring as specified in the NPDES permit.

4.4.1 Toxicity Identification Evaluation (TIE) and Characterization

Although the fathead minnow has failed the WET tests on occasion (three since February 2008), the water flea has demonstrated a greater sensitivity to the discharges from Outfall 006 and 007. Therefore, the TIE manipulations associated with the identification and characterization portion of the storm water TRE will be focused on the water flea. As described in the Phase I TIE manual, the initial characterization will consist of multiple manipulations and will generally follow procedures described in EPA's Phase I Characterization Procedures (EPA/600/6-91/003). Phase II and Phase III Characterization and Confirmation Procedures from EPA/600/R-92/080 and EPA/600/R-92/081 will be generally followed as warranted depending on results of the Phase I characterization step.

Examples of possible TIE manipulations include:

- 1) Degradation tests designed to determine how toxicity changes (degrades) over time,
- 2) pH adjustment and graduated pH tests used to determine the effect of pH adjustment on toxicity,
- 3) Filtration tests to develop an association between toxicity and filterable materials,
- 4) Aeration/pH adjustment tests to determine if toxicity is caused by oxidizable or volatile substances, including those that can be made to oxidize or become volatile through change in pH,
- 5) Solid phase extraction/pH adjustment tests to determine if toxicity can be attributed to non-polar organic and metal chelate compounds (or those that can be made non-polar through pH changes),
- 6) Oxidant reduction tests to determine if toxicity can be attributable to oxidants, and
- 7) EDTA chelation test for evaluation of potential heavy metal toxicity.

4.4.2 Assembly of Pertinent Facility Information

Information associated with EDCC will be obtained and reviewed to assess the potential for facility materials or operations to cause or contribute to failures of the WET tests. As the TRE advances, the information obtained in this step will be relied on for more indepth analyses. Informational categories include:

- 1) Facility configuration and process information: The general facility configuration, operational scenarios, sources of storm water, and general maintenance records will be obtained and reviewed to establish facility baseline and anticipated operating configuration and to assess whether operations could contribute to, or be used to, mitigate failures of the storm water WET tests.
- 2) Facility chemical usage: MSDS sheets on chemicals used in the watershed will be assembled and reviewed. Chemical use records will be examined and theoretical discharge concentrations of potentially suspect system additives may be calculated as warranted.
- 3) Facility sampling data: Monitoring information including NPDES outfall monitoring or other data collected by the facility will be reviewed as needed to evaluate the potential to assist in the TRE process. Facility WET test results and associated analytical data will be further reviewed.
- 4) Housekeeping and best management practices: Facility housekeeping and storm water pollution prevention records will be examined to evaluate their potential for effect on storm water WET test performance. Similar to facility operating procedures, housekeeping and best management practices will be reviewed to evaluate opportunity for effluent toxicity mitigation.

4.4.3 Source Identification

Depending on the results of the facility data review, and in consideration of the results of the TIE and characterization process, the next step in the TRE process will likely be an evaluation of the storm water streams entering the individual outfalls. This step is designed to identify the specific source and/or cause of WET test failures. As warranted, this step may involve a more thorough review of the documents and information obtained as described in Section 4.2.3. or may include sampling, WET testing of storm water from sub-basins or streams, and analyses of individual sub-

basin storm runoff from individual process units. Source identification efforts can typically consist of the following steps, as described in EPA's Generalized Industrial TRE Methods (EPA6002-88/070):

- 1) Setting initial source search from evaluation of previously collected data,
- 2) Collection of samples from selected storm water streams,
- 3) Development of chemical specific analyses for tracking sources,
- 4) Evaluation of treatment effects on identified sources, and
- 5) Characterization of WET test performance in suspect source storm waters.

4.4.4 Treatment Considerations and Chemical Optimization

The treatment consideration phase of the storm water TRE will examine the operation and optimization of the storm water management. Facility operations, performance logs, design capacities, and customary practices will be examined in conjunction with performance data obtained as described in Section 4.2.1 to assess the opportunity for operational adjustments to mitigate effluent WET test performance. The information developed from evaluation of storm water sources and watershed contributions is particularly useful when designing and implementing any corrective actions within the watershed, including but not limited to, source segregation, physical storm water management, or contact prevention activities. Facility specific management practices will be considered where it appears that the opportunity for watershed adjustments may successfully meet TRE objectives.

An important component of the overall assessment of storm water sources and facility storm water management optimization involves a thorough understanding of the raw products and chemicals used in the plant and the exposure of those to storm events. Chemicals exposed to storm water are of particular interest in the Outfall 006 and Outfall 007 WET testing results. A chemical optimization evaluation may be conducted in association with review of the watersheds contributing to the discharge through Outfalls 006 and 007.

4.4.5 Toxicity Reduction Method Evaluation

The selection process for choosing the toxicity reduction method or combination of methods that achieves the TRE project objective will consider a number of important factors including:

- 1) Probability of long term effluent toxicity reduction,
- 2) Cost,

- 3) Fit with long term facility goals,
- 4) Implementation and operational ease or complexity, and
- 5) Adaptability to changing regulations.

Potential solutions will be compared on a cost/benefit basis considering these factors, and perhaps others as necessary. The solution that best fits the facility's needs and will meet the storm water TRE objectives will be selected for implementation.

4.4.6 Post Implementation Confirmation

EDCC will specify a post implementation monitoring schedule sufficient to confirm final effluent toxicity reduction as specified in the TRE Plan objective.

4.5 Document Unusual Operating Conditions or Unique Events Within the Facility

Facility operational information and operating data will be documented with specific attention to unusual operating conditions or events that occurred during the time frame of WET testing. These operational conditions will be evaluated to determine if a specific activity may have contributed to unanticipated results in the WET testing through Outfalls 006 and 007. Since this is a manufacturing facility, there are conditions that are not controllable or preventable. There are policies in place such as the SWPPP and the SPCC to limit and correct deficiencies once identified. These policies and procedures will be evaluated as they may relate to the WET test results. Modifications to the policies and procedures will be developed as required to address WET test failures to the extent that those modifications improve WET compliance.

4.6 Evaluate WET Toxicity Test Results in Concert with Analytical, Rainfall, Flow and Operational Data

The results of the WET testing will be evaluated in association with the information developed in the tasks above. The objective of the assessment is to determine the existing conditions that result in storm water WET test failure (if it occurs) and those conditions that promote tests success. In the absence of any identified cause/effect relationship, this data will be utilized to document conditions just prior to and during the WET testing periods. The specific

analyses have not yet been determined and will be dependent on information developed during the implementation of the storm water TRE.

4.7 Additional QA/QC Activities

Depending on the results of the routine analytical monitoring and WET testing, additional analytical parameters and WET testing may be completed including but not limited to duplicate sampling and/or split samples to multiple labs. Any additional effort will be designed to answer specific questions generated by the information developed during the storm water TRE.

5.0 SAMPLING PLAN

5.1 General Statement and Methods

A sampling plan for conducting a storm water TRE should be specific enough that there is confidence that the samples will be collected, handled, preserved and transported correctly so that there will be a high degree of confidence on decisions made on the basis of those samples; yet the plan must be general enough to be modified as conditions warrant during the TRE.

For purposes of all routine samples, collection, preservation, containers, holding times and analyses will follow methods approved by EPA codified at 40 CFR Part 136, as amended. Toxicity testing completed for the TIE shall follow typical quality assurance guidelines as outlined in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters Using Freshwater and Marine Organisms* (EPA, 1993). As warranted if metals toxicity is suspected, Clean Techniques Sampling following EPA Method 1669 will be conducted for samples subjected to metals analyses.

5.2 Basic Sampling Plan

Sampling shall initially be conducted for the Phase I TIE and associated permitted parameters from the final effluent only. Samples will be collected in the location used for NPDES permit compliance. Samples for TIE WET testing shall be collected in the volume and containers required by the laboratory for completion of the Phase I characterization. Samples shall be collected by personnel wearing latex gloves in a manner designed to prevent sample contamination (e.g. modified clean sampling based on Method 1669). Samples shall also be collected concurrently for analysis of NPDES permit parameters. All samples collected for analyses of conventional parameters will be as allowed by the NPDES permit. Samples for

metals collected using clean techniques sampling will consist of four equally spaced grab samples collected over an 8-hour period. Volumes to be collected will be calculated on a case-by-case basis in advance of the sampling event to ensure sufficient water is collected for all foreseeable TRE purposes. When there is question regarding sample volume, additional sample volume will be collected.

In addition to samples collected for analyses, *in-situ* measurements of physiochemical parameters will also be made. Multiple measurements will be obtained during the course of collection of composite samples where feasible. The parameters of dissolved oxygen, pH, conductivity, and temperature will be measured as described.

5.3 Confirmation Sampling

Should the Phase I WET testing identify a potential source of test failures at the critical dilutions proposed by ADEQ in the pre-draft NPDES permit renewal, the testing must be repeated using another set of effluent samples from a new sampling event. A minimum of two series of Phase I TIEs should be conducted to determine the potential source of WET test failures. If the Phase I TIEs do not return similar results then additional sampling is required for completion of additional Phase I toxicity characterization. All methods and procedures described in Section 5.2, Basic Sampling will be followed for identification confirmation sampling.

6.0 QUALITY ASSURANCE PLAN

Trained personnel will be conducting the sampling, toxicity testing and data analysis during the study. The laboratory conducting all analytical testing and toxicity testing shall be an ADEQ certified laboratory with experience in the respective areas. Records will be kept recording all samples collected, flows recorded, tests completed, and data analyzed. Field check sheets will be completed for days requiring multiple samples and multiple sampling locations to ensure that all necessary samples are collected. Notes will be made of any unusual observations occurring during each sample run such as water color changes, odors, and noticeable plant process changes. All record sheets, calibration logs, field notes, and other study documentation will be reviewed for completeness and accuracy by the Project Manager.

All samples collected will be placed in the appropriate clean containers supplied by the laboratory. Each sample container will be labeled with the sample I.D., date, time, and initials of

collector(s). Samples will be placed in ice chests for delivery to the laboratory. Chain of Custody (COC) forms that include information on each sample delivered to the laboratory for analysis will be completed. Each COC form will be signed by each person handling the samples from collection in the field to receipt in the laboratory. The COC form will include all required information and will be checked for completeness prior to submission of samples to the laboratory.

Duplicate samples and field blanks for each analyte (other than WET testing) shall be collected at a minimum frequency of 10% of the samples collected for the entire study. A minimum of one duplicate sample and one field blank sample shall be collected during each sampling event.

Duplicate samples consist of a second sample taken immediately following the test sample from the same location to be used to measure variability in the test media and repeatability of the sampling techniques. Duplicate samples shall vary by no more than 20% relative percent difference (RPD) or the sample results will be considered suspect. In the event an RPD exceeds 20%, the Project Manager will investigate the incident to determine the cause of the exceedence and what action, if any, is necessary.

Field blanks will consist of a sample of ultra pure laboratory water poured into the appropriate sample container in the field to simulate all possible contaminant exposures. If a field blank is found to be contaminated, by a chemical of concern, an analysis will be conducted to determine the potential impact of the contamination on the results of the associated batch of samples. The Project Manager will determine the appropriate course of action from the results of the analysis.

The laboratory will validate analytical data by use of blanks, laboratory controls, spikes, and spike duplicates. Laboratory blanks measure the amount of each respective analyte contributed from the analytical procedure. A laboratory blank is considered out of control for a specific analyte if the value exceeds the higher of either the minimum detection limit (MDL) or 5% of the measured concentration in the sample. A laboratory control measures the ability of the laboratory to recover an analyte from a blank matrix. The laboratory spike sample is used to evaluate the laboratory's ability to recover an analyte in the sample matrix. The QC exceedence criteria for laboratory controls and spikes is based on upper and lower control limits derived from the laboratory's method specialized limits. The laboratory spike duplicate is used to evaluate the laboratory's precision (ability to attain similar analytical results from duplicate samples). A relative percent difference (RPD) is calculated for the spike and spike duplicate.

The RPD is compared to method specialized limits to determine QC exceedence. Any significant excursion from one of the QC parameters will result in a repeat of the analysis in question following an investigation by the laboratory as to the cause of the QC excursion and a report of the corrective actions taken.

WET testing shall include minimum control survival of 80% and an acceptable level of control organism performance (storm water reproduction) required by the prescribed testing for a valid WET test. It should be emphasized that WET tests with control survival of 70% to 80% may still contain valuable data that may be used towards characterization of effluent toxicity but must be used with caution. Additional requirements specific to TIEs (EPA, 1991) include the addition of a baseline WET test to ensure toxicity exists in the original sample and method controls in which laboratory dilution water is treated identical to the test treatment and run parallel to the test treatment to ensure that the test treatment itself is not causing WET test failures.

7.0 PROJECT ORGANIZATION

The following personnel and roles are currently contemplated for the EDCC Storm water TRE:

Project Manager: David Sartain, EDCC
Responsible for overall project, planning, logistics and coordination. Also serves as the project's facility QA/QC Supervisor.

Consulting Services: GBMc & Associates
Provide technical support to Mr. Sartain including but not limited to sampling strategies, data evaluation and interpretation, wastewater engineering, specialized sampling techniques.

Routine Sample Collection: EDCC personnel and/or GBMc & Associates.
Responsible for collection of storm water samples in accordance with QA/QC provisions of the sampling protocols.

Laboratory services: Bioanalytical (routine WET testing), Great Lakes Environmental Center (GLEC) of Columbus, Ohio (specialized storm water TRE/TIE manipulations and TRE Phase II and TRE Phase III manipulations, if required).

8.0 PROJECT SCHEDULE

The effective NPDES permit for the facility specifies that a final report on toxicity reduction activities shall be submitted no later than 28-months from the date of lethality confirmation. This 28-month study goal will also be applied to the storm water investigation. The date of confirmation for EDCC was established as September 24, 2010, the date of WET test failure confirmation. The TRE plan submittal was required within 90 days of notification (on or about December 23, 2010). The TRE plan submittal is to be followed by a 30 day period for agency review and approval, providing a start date for the storm water TRE on or about January 23, 2011.

Due to the complexity and variability demonstrated in the historical storm water WET testing of Outfalls 006 and 007 effluent, and the nature of the discharge (storm water dominated); the following schedule represents a best estimate of the time frame required to complete the storm water TRE requirements. The total project is expected to take 28 months to complete. This time schedule may be modified (compressed or expanded) as required by developments within the TRE process.

Therefore, the timing for the final report to ADEQ would not be later than January 24, 2013. This becomes the date upon which the final report is to be submitted to ADEQ. During the course of the TRE, individual activities may overlap or may be completed sequentially as dictated by the initial stages of the TRE activities. The other timeframe specified in the permit is for submittal of routine TRE activities report. The initial quarterly activities report will be submitted in April 2011. Subsequent status reports, to be submitted throughout the TRE project, are to be submitted with Discharge Monitoring Reports in the months of July and October 2011, January, April, July and October 2012, with the final report submitted no later than January 24, 2013. The schedule currently contemplated for the TRE is shown as follows. EDCC may alter the schedule as warranted based on the results of the TRE activities.

Activity	Date	
	Start	Complete
Submit TRE Action Plan	--	December 23,2010
Receive plan approval from ADEQ	--	February 2011
Assemble facility information	January 2011	October 2012
Baseline toxicity and analytical testing	January 2011	September 2012
Toxicity identification and characterization		
Initial TIE (1 st Qt TRE, as WET failures allow)	Jan 2011	April 2011
Confirmation TIEs	September 2011	October 2012
Source identification	May 2011	October 2012
Treatment considerations and chemical optimization	January 2011	June 2012
Evaluation of toxicity reduction methods	January 2011	June 2012
Post implementation confirmation	January 2012	November 2012
Submit quarterly activity reports	April 2011	Every 3 months through October 2012
Submit final TRE report		January 2013

ATTACHMENT

Pre-Draft NPDES

DRAFT

Permit Number: AR0000752
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water body, at the appropriate instream critical dilution. Pursuant to 40 CFR 122.44(d)(1)(v), ADEQ has determined from the permittee's self reporting that the discharge from this facility does have the reasonable potential to cause, or contribute to an instream excursion above the narrative standard within the applicable State Water Quality Standards, in violation of Section 101(a)(3) of the Clean Water Act. Therefore, the draft permit must establish both monthly average and 48-hr minimum effluent limitations for lethality following Regulations promulgated by 40 CFR 122.44(d)(1)(v). These effluent limitations for lethality (48-hr NOEC) are applied at Outfalls 006 and 007 beginning three years from the effective date of the permit. During the three years following the effective date of the permit, the draft permit requires monitoring and reporting only for lethality with no limitations being established. The daily average lethality (48-hr NOEC) and 48-hr minimum lethality (48-hr NOEC) value shall not be less than 22% effluent for Outfall 006 and shall not be less than 50% effluent for Outfall 007.

Whole effluent toxicity testing of the effluent is thereby required as a condition of this permit to assess potential toxicity. The WET testing procedures stipulated as a condition of this permit are as follows:

TOXICITY TESTS

FREQUENCY

Acute WET Testing/Limit

Once/2 months (Outfalls 006 and 007)

Requirements for measurement frequency are based on the CPP. The Acute WET Limit may become effective three years from the effective date of the permit.

Although the 7Q10 is less than 100 cfs (ft³/sec) and the dilution ratio is less than 100:1, acute WET testing requirements will be included in the permit because these are stormwater only outfalls with no treatment units associated with the outfall.

The calculations for dilution used for the acute WET testing are as follows:

$$\text{Critical Dilution (CD)} = (Q_d / (Q_d + Q_b)) \times 100\%$$

Outfall 006

$Q_d = 1$ cfs, assumed for calculation purposes due to use of background flow to effluent flow ratio

Background Flow to Effluent Flow Ratio = 53.6:1, based upon stormwater flow study dated 09/21/2006, for calculation purposes, 53.6 cfs will be used to calculate Q_b

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$$Q_b = \text{Zone of Initial Dilution} = 0.1 \times 0.67 \times 53.6 = 3.5912 \text{ cfs}$$

$$CD = ((1) / (1 + 3.5912)) \times 100\% = 22\%$$

Outfall 007

$Q_d = 1$ cfs, assumed for calculation purposes due to use of background flow to effluent flow ratio

Background Flow to Effluent Flow Ratio = 15:1, based upon stormwater flow study dated 09/21/2006, for calculation purposes, 15 cfs will be used to calculate Q_b

$$Q_b = \text{Zone of Initial Dilution} = 0.1 \times 0.67 \times 15 = 1.005 \text{ cfs}$$

$$CD = ((1) / (1 + 1.005)) \times 100\% = 50\%$$

Toxicity tests shall be performed in accordance with protocols described in "Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms", EPA/600/4-90/027. A minimum of five effluent dilutions in addition to an appropriate control (0%) are to be used in the toxicity tests. These additional effluent concentrations and the low-flow effluent concentration (critical dilution) are listed in the table below: (See the CPP)

Outfall	Critical Dilution	Dilution Series
006	22%	9%, 12%, 17%, 22%, 29%
007	50%	21%, 28%, 38%, 50%, 67%

The requirement for acute WET testing is based on the magnitude of the facility's discharge with respect to receiving stream flow. The stipulated test species are representative of organisms indigenous to the geographic area of the facility; the use of these is consistent with the requirements of the State water quality standards. The WET testing frequency has been established to provide data representative of the toxic potential of the facility's discharge, in accordance with the regulations promulgated at 40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be reported according to EPA/600/4-90/027 and shall be submitted as an attachment to the Discharge Monitoring Report (DMR).

This permit may be reopened to require further WET testing studies, Toxicity Reduction Evaluation (TRE) and/or effluent limits if WET testing data submitted to the Department shows toxicity in the permittee's discharge. Modification or revocation of this permit is subject to the provisions of 40 CFR 122.62, as adopted by reference in ADEQ Regulation No. 6. Increased or intensified toxicity testing may also be required in accordance with Section 308 of the Clean Water Act and

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Section 8-4-201 of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended).

In accordance with Condition No. 20 of Part III of the permit, the monitoring and reporting requirements (i.e., the interim requirements) for WET testing will continue at Outfalls 006 and 007 if the permittee demonstrates full compliance with the proposed WET limits during the first 30 months of the permit. If eligible to retain the monitoring and reporting requirements, the permittee would be required to submit an application to modify the permit six months prior to the limits becoming effective. The removal of the proposed WET limits would not constitute a violation of the anti-backsliding provisions of 40 CFR 122.44(l) because they will never have become effective and would also be based on new information.

C. Administrative Records

The following information summarized toxicity test submitted by the permittee during the term of the current permit at Outfalls 006 and 007.

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Permit Number: AR0000752 AFIN: 70-00040 Outfall Number: 006
 Date of Review: 10/15/2010 Reviewer: M. Barnett
 Facility Name: El Dorado Chemical Company
 Previous Dilution series: 32, 42, 56, 75, 100 Proposed Dilution Series: 9, 12, 17, 22, 29
 Previous Critical Dilution: 100 Proposed Critical Dilution: 22
 Previous TRE activities: TRE Plan will be submitted no later than December 23, 2010

Frequency recommendation by species

Pimephales promelas (Fathead minnow): once per two months
Daphnia pulex (water flea): once per two months

TEST DATA SUMMARY

TEST DATE	Vertebrate		Invertebrate		Effluent Treatment
	Lethal	NOEC	Lethal	NOEC	
Sep-05		0			0 None
Oct-05		100			0 None
Jan-06		100			0 None
Feb-06		100			75 None
Mar-06		100			100 None
Jul-06		100			42 None
Aug-06		100			75 pH adjusted
Aug-06		75			75 None
Oct-06		100			0 None
Jan-07		100			100 None
Feb-07		100			56 None
Mar-07		100			0 pH ADJUSTED
Mar-07		75			0 None
Apr-07		100			100 None
May-07		100			56 None
Jun-07		75			56 None
Jun-07		75			56 pH ADJUSTED
Jul-07		32			0 pH ADJUSTED
Sep-07		42			0 None
Sep-07		100			0 pH ADJUSTED
Oct-07		0			0 pH ADJUSTED
Nov-07		100	invalid		pH ADJUSTED
Dec-07		42			32 None
Jan-08		100			56 None
Feb-08		100			100 None
Mar-08		100			100 None
Apr-08		100			100 None
May-08		100			100 None
Jun-08		100			100 None
Aug-08		100			100 None
Sep-08		100			100 None
Oct-08		100			100 None
Nov-08		100			100 None
Dec-08		75			100 None
Jan-09		100			100 None
Mar-09		100			100 None
Apr-09		100			100 None
May-09		100			100 Nonc
Jul-09		75			75 None
Sep-09		100			100 None
Oct-09		100			100 None
Nov-09		100			100 None
Dec-09		100			100 None

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Jan-10	100	100 None
Feb-10	100	100 None
Mar-10	100	100 None
May-10	100	100 None
Jun-10	100	0 None
Jul-10	100	100 None
Aug-10	100	0 None

Failures are noted in **BOLD**

REASONABLE POTENTIAL CALCULATIONS

	Vertebrate Lethal	Invertebrate Lethal
Min NOEC Observed	31	31
TU at Min Observed	3.23	3.23
Count	50	49
Failure Count	11	23
Mean	1.227	1.724
Std. Dev.	0.577	0.954
CV	0.5	0.6
RPMF	1.3	1.4
Reasonable Potential	4.194	4.516

PERMIT ACTION

P. promelas lethal - Limit (22%) - 3 yr compliance schedule

D. pulex lethal - Limit (22%) - Compliance schedule -Final TRE report due date March 24, 1013

Additional requirements (including WET Limits) rationale/comments concerning permitting:

Permit will include a 3 yr compliance schedule for the *P. promelas* lethal limit. After 18 bi-monthly tests (beginning at Permit effective date), at the request of the permittee, ADEQ will reevaluate the Reasonable Potential associated with *P. promelas* lethality. If Reasonable Potential no longer exists, the final *P. promelas* lethal limit will be removed through a minor modification (prior to the effective date of the final limits) and replaced with report only.

Reasonable Potential will be re-evaluated during the next permit renewal to determine if WET limits are needed. If needed, no schedule of compliance will be granted.

The permittee is currently beginning a TRE. The TRE plan is due to the Department December 23, 2010. The permit will include a compliance date of March 24, 2013 for the *D. pulex* lethal limit.

Upon completion of the TRE, or anytime before, if the permittee has successfully eliminated effluent toxicity at the critical dilution, the *D. pulex* lethal WET final effluent limits may be replaced by monitoring and reporting only requirements through a minor modification. The modification may include limits on the

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pollutant(s) identified as the source of toxicity. Institution of a chemical-specific limit in lieu of the *D. pulex* lethal limit is appropriate per federal regulations at 40 CFR 122.44(d)(1)(v). Otherwise the permittee must comply with the final *D. pulex* lethal WET effluent limit.

Continuous Planning Process, App. D, Part III, E.2.b. states "If the permittee has a history of sporadic toxicity, toxicity testing frequency shall be twelve times a year for both species."

Although the CPP states twelve tests per year, it is recommended that WET tests be conducted six times per year. This will allow EDCC to use resources to potentially identify and reduce the source of sub-lethal toxicity in WET tests prior to the end of the 3 year compliance schedule.

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Permit Number: AR0000752 AFIN: 70-00040 Outfall Number: 007
 Date of Review: 10/15/2010 Reviewer: M. Barnett
 Facility Name: El Dorado Chemical Company
 Previous Dilution Series: 32, 42, 56, 75, 100 Proposed Dilution Series: 21, 28, 38, 50, 67
 Previous Critical Dilution: 100 Proposed Critical Dilution: 50
 Previous TRE activities: None

Frequency recommendation by species

Pimephales promelas (Fathead minnow): once per two months
Daphnia pulex (water flea): once per two months

TEST DATA SUMMARY

TEST DATE	Vertebrate		Invertebrate	
	Lethal	NOEC	Lethal	NOEC
Sep-05	75	75		
Oct-05	0	0		
Jan-06	100	0		
Feb-06	100	100		
Mar-06	100	100		
Jul-06	100	56		
Aug-06	100	100		
Oct-06	100	100		
Jan-07	0	0		
Jan-07	100	100		
Feb-07	100	0		
Mar-07	100	100		
Mar-07	42	0		
Apr-07	56	56		
May-07	100	100		
Jun-07	100	100		
Jun-07	100	100		
Jul-07	0	0		
Sep-07	56	56		
Oct-07	42	0		
Nov-07	100		invalid	
Dec-07	100			100
Jan-08	0	0		
Feb-08	100	100		
Mar-08	100	100		
Apr-08	100	100		
May-08	100	100		
Jun-08	100	100		
Aug-08	100	100		
Sep-08	100	100		
Oct-08	100	100		
Nov-08	56	100		
Dec-08	100	100		
Jan-09	100	100		
Mar-09	100	100		
Apr-09	100	100		
May-09	100	100		
Jul-09	100	100		
Sep-09	100	100		
Oct-09	100	100		
Nov-09	100	100		
Dec-09	100	100		

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Jan-10	100	100
Feb-10	100	100
Mar-10	100	100
May-10	100	100
Jun-10	100	100
Jul-10	100	100
Aug-10	100	100

Failures are noted in BOLD

REASONABLE POTENTIAL CALCULATIONS

	Vertebrate Lethal	Invertebrate Lethal
Min NOEC Observed	31	31
TU at Min Observed	3.23	3.23
Count	49	48
Failure Count	10	12
Mean	1.293	1.427
Std. Dev.	0.668	0.836
CV	0.5	0.6
RPMF	1.3	1.4
Reasonable Potential	4.194	4.516

PERMIT ACTION

P. promelas lethal - Limit (50%) - 3 yr compliance schedule
D. pulex lethal - Monitoring - Limit (50%) - 3 yr compliance schedule

Additional requirements (including WET Limits) rationale/comments concerning permitting:

Permit will include a 3 yr compliance schedule for the *D. pulex* and *P. promelas* lethal limits. After 18 bi-monthly tests (beginning at Permit effective date), at the request of the permittee, ADEQ will reevaluate the Reasonable Potential associated with *D. pulex* and *P. promelas* lethality. If Reasonable Potential no longer exists, the final *D. pulex* and/or *P. promelas* lethal limits will be removed through a minor modification (prior to the effective date of the final limits) and replaced with report only.

Reasonable Potential will be re-evaluated during the next permit renewal to determine if WET limits are needed. If needed, no schedule of compliance will be granted.

Continuous Planning Process, App. D, Part III, E.2.b. states "If the permittee has a history of sporadic toxicity, toxicity testing frequency shall be twelve times a year for both species."

Although the CPP states twelve tests per year, it is recommended that WET tests be conducted six times per year. This will allow EDCC to use resources to potentially identify and reduce the source of sub-lethal toxicity in WET tests prior to the end of the 3 year compliance schedule.