

WDH



MALAGA COUNTY WATER DISTRICT

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RECEIVED

April 19, 2012

APR 20 2012

California Regional Water Quality Control Board
Central Valley Region
1685 E Street
Fresno, CA 93706-2020

RWQCB-CVR
FRESNO, CALIF.

Attention: Mr. Dale Harvey, Senior Engineer

Subject: Malaga County Water District
WDR No. R5-2008-0033 NPDES CA0084239
Telephone Number 559-485-7353

Dear Mr. Harvey:

On behalf of the Malaga County Water District, please find attached the proposed Toxicity Reduction Evaluation (TRE) workplan for review and approval. The District is required to initiate the workplan due to a notification that an accelerated toxicity test failed to satisfy the requirements of the permit.

Respectfully,


Russ Holcomb
General Manager

cc: Provost & Pritchard Engineering Group, Michael Taylor

INITIAL INVESTIGATIVE TOXICITY REDUCTION EVALUATION

**WASTEWATER TREATMENT
AND DISPOSAL FACILITIES**

APRIL 19, 2012

Prepared for:

Malaga County Water District

Prepared by:

Provost & Pritchard Consulting Group
Fresno, California

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APPENDIX

EPA Manual – Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants

Figure 3-1

Table 2-1

Table 2-2

Notification of test results

1 INTRODUCTION

The Malaga County Water District operates a wastewater treatment and disposal facility that is subject to Waste Discharge Requirements Order No. R5-2008-0033 and NPDES Permit No. CA0084239. The facility has a total design flow of 1.2 mgd. The facilities may discharge 0.85 mgd to evaporation/percolation ponds and 0.45 mgd of disinfected tertiary effluent to the Fresno Irrigation District Central Canal.

The facilities include a headworks (includes screw pumps, flowmeter, sampler, and a grit chamber), a dissolved air flotation clarifier (DAF), three activated sludge aeration chambers, two aerobic sludge digesters, a sludge thickening tank, three secondary clarifiers (two are operational), a tertiary filter and an ultraviolet light disinfection channel. The facilities include three sludge drying beds, all of which are lined with soil cement.

1.1 WASTE DISCHARGE REQUIREMENTS

The Waste Discharge Requirements required the District to prepare and submit an Initial Investigative Toxicity Reduction Evaluation (TRE) Work Plan for approval. The Initial Investigative Toxicity Reduction Evaluation Work Plan submitted in September, 2008 was approved on March 17, 2009.

If the numeric toxicity monitoring trigger is exceeded the District would be required to begin accelerated monitoring and initiate a Toxicity Reduction Evaluation (TRE). The numeric toxicity monitoring trigger is >1 TUc, essentially, requiring 100 percent survival. The District is required to conduct acute toxicity testing quarterly. In addition, the District is required to conduct chronic toxicity testing quarterly.

If the numeric toxicity monitoring trigger is exceeded the District shall initiate accelerated monitoring consisting of four (4) chronic toxicity tests in a six week period using the species that exhibited toxicity. If the results of the four (4) accelerated tests do not exceed the monitoring trigger, the District may cease accelerated monitoring and resume regular testing.

If the source of the toxicity is readily identified, the District shall make the necessary corrections and continue the accelerated testing until four (4) consecutive accelerated tests do not exceed the monitoring trigger.

If any of the accelerated toxicity tests exceed the monitoring trigger, the District shall cease accelerated monitoring and initiate the TRE. Within 30 days of notification that the test results exceed the monitoring trigger, the District shall submit a TRE Action Plan to the RWQCB.

The District was required to initiate an accelerated toxicity testing series of the effluent due to a TUc of 1.3 for *Selenastrum capricornutum* on March 25, 2011. The first of four accelerated tests resulted in acceptable results. However, on March 21, 2012 the

District was notified by Pacific EcoRisk that the second accelerated test had a TUC of 1.3, which exceeds the permit of 1.0 (refer to Appendix). Therefore, the TRE Work Plan has been initiated.

The first step is to submit to the RWQCB for review and approval, a TRE Action Plan that identifies the steps the District will take to:

- a) investigate and identify the cause(s) of the toxicity, including TRE WET monitoring schedule,
- b) specific actions the District will take to mitigate the impact of the discharge and prevent the occurrence of the toxicity, and
- c) a schedule for the actions.

1.2 EPA MANUAL

The District intends to utilize EPA Manual 833B-99/002 Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants as a guideline.

1.3 QA QC PROGRAM

The toxicity testing must include chain of custody documentation, results of the toxicant data with statistical output providing the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested. The testing shall include toxicant control charts for each endpoint. The District shall report information on deviations or problems encountered and how they were dealt with.

2 INITIAL INVESTIGATIVE TOXICITY REDUCTION EVALUATION WORK PLAN

2.1 INVESTIGATION AND EVALUATION TECHNIQUES

2.1.a Initial Data

District staff shall obtain samples of the effluent and arrange for delivery of the samples to the laboratory for testing purposes. Sampling, preservation, and handling methods will be performed in accordance with instructions from the certified laboratory. Strict adherence to sampling and handling methods ensures consistency of the base data upon which all other actions are predicated.

The certified laboratory to perform the toxicity testing shall confirm that all testing has been performed in accordance to the laboratory's quality assurance program. For

example, the first toxicity tests were conducted by Pacific EcoRisk as a subcontractor to Moore Twining Associates. Moore Twining Associates is the District's contracted testing laboratory.

The Acute and Chronic Toxicity results are reviewed by the laboratory subcontractor (Pacific EcoRisk), by the District's contracted laboratory (Moore Twining Associates), and the District prior to any subsequent action. All testing is performed per established standard methods and include the testing of a laboratory control sample.

2.1.b Self Monitoring Reports

The District prepares and submits to the RWQCB monthly self monitoring reports. The District is responsible to review the reports and identify inconsistencies that may provide information associated with effluent variability.

The District tracks trends of the various constituents that are required by the RWQCB. Variations of the influent or effluent constituents are reviewed as they may indicate toxicity influences.

Interviews of operating personnel may be conducted to supplement the information included in the reports.

2.1.c Pretreatment Program Monitoring

The District requires all non residential dischargers to obtain a Non Residential Waste Discharge Permit. The permit identifies any required pre-treatment facilities at the specific discharger, and monitoring and reporting deemed necessary. Review of the monitoring results from individual dischargers within the District would be performed to determine if toxic materials had been discharged to the sanitary sewer collection system.

All new non-residential connections must obtain a permit and provide operational information to the District. Similarly, any facility that has a change in operation is required to notify the District of the changes, for the purpose of modifying the pretreatment requirements as appropriate. In addition, the permits are subject to review and renewal on a regular basis to determine if changes to the permits and associated requirements are appropriate.

Interviews of the individual commercial and industrial dischargers may be conducted to supplement the information included in the reports.

2.2 IN-HOUSE TREATMENT EFFICIENCY AND GOOD HOUSEKEEPING PRACTICES

2.2.a Operation and Maintenance Procedures

In addition to the reports prepared and submitted to the RWQCB, the District operators perform operation and process control monitoring of the facilities as outlined in the Operation and Maintenance Manual. Operation or process control results beyond normal operating ranges may identify if any of the specific treatment components are not operating properly, thereby resulting in plant upset.

Good Housekeeping

The Operation and Maintenance Manual also identifies housekeeping for the facilities. In addition, the District recently conducted a survey of chemicals stored and used at the site. The information is also required for submittal to the County of Fresno Environmental Health Department for the purposes of maintaining proper handling and reporting of hazardous materials.

2.3 WHO WILL CONDUCT THE TOXICITY IDENTIFICATION EVALUATION, IF NECESSARY

The District, in conjunction with its contracted laboratory (Moore Twining Associates) and consulting engineer (Provost & Pritchard Engineering Group) will perform the evaluation. Additional experts or outside contractors may be utilized, if necessary, depending on the course of the evaluation.

3 DRAFT TRE ACTION PLAN

As stated previously, if the numeric toxicity monitoring trigger is exceeded the District shall initiate accelerated monitoring consisting of four (4) chronic toxicity tests in a six week period using the species that exhibited toxicity. If the results of the four (4) accelerated tests do not exceed the monitoring trigger, the District may cease accelerated monitoring and resume regular testing.

If the source of the toxicity is readily identified, the District shall make the necessary corrections and continue the accelerated testing until four (4) consecutive accelerated tests do not exceed the monitoring trigger.

If any of the accelerated toxicity tests exceed the monitoring trigger, the District shall cease accelerated monitoring and initiate the TRE. Within 30 days of notification that the test results exceed the monitoring trigger, the District shall submit a TRE Action Plan to the RWQCB.

The initial steps of the Action Plan are as follows (week 1 and 2):

3.1 INITIAL SAMPLE AND TEST (Week 1):

Sample the effluent and test for common toxicants – ammonia, chlorine, surfactants, organophosphate pesticides, metals, treatment additives, TDS. Refer to Figure 3-1 from EPA Manual.

Sample the discharge from the Class 1 connections and test for common toxicants – ammonia, chlorine, surfactants, organophosphate pesticides, metals, treatment additives, TDS.

In addition, sample the discharge from Fresno Truck Wash, Beacon Truck Wash, Sterling Coatings, and Inland Star.

If the test results indicate toxic levels of any common toxicants, identify the source and proceed with corrective measures. Follow up with sampling and testing to confirm correction of the problem.

3.2 TREATMENT PLANT EVALUATION (Week 2-4):

Confirm the treatment plant is operating according to established operating parameters:

3.3 FLOW DIAGRAM OVERVIEW

Perform an overview of the flow diagram to determine if changes have been implemented that might result in plant upset.

3.4 WWTP CRITERIA

Perform an overview of the operating criteria to determine if changes have been implemented that might result in plant upset.

3.5 WWTP PERFORMANCE

Perform a review of the actual operating performance of the various WWTP components to determine if there are sources of plant upset. Refer to Figure 3-1 from EPA Manual.

- A. Headworks
- B. DAF
- C. Activated Sludge
- D. Clarification
- E. Sludge
- F. Tertiary Filter
- G. Disinfection

Identify any chemicals used within the WWTP (chemical, location used, quantity used, schedule used, etc.).

A report summarizing the findings of the WWTP overview will be prepared by the District's consultant.

3.6 PRE-TREATMENT PROGRAM

Review the existing Class 1 and Class II dischargers to determine if changes to the discharge have occurred. Sampling and testing in addition to the initial sampling may be determined to be necessary.

A report summarizing the findings of the Pre-Treatment Program review will be prepared by the District's consultant.

3.7 EVALUATION OF TESTING AND PERFORMANCE REVIEW (Week 5-7)

Upon receipt of the results of testing at the treatment facilities and pre-treatment facilities, the District may determine the specific toxic constituent(s) responsible for the failures. If the test results and facility performance are directly related, appropriate corrective measures would be performed. Sampling and testing would be conducted to verify that the source of the toxic constituent has been corrected.

A report summarizing the corrective measures and confirming the result will be prepared by the District or the District's consultant and submitted to the RWQCB by June 4, 2012 (75 days after the notification date).

4 FURTHER ACTIONS

If necessary, additional actions associated with a Toxicity Identification Evaluation, Toxicity Source Evaluation, and Toxicity Control Evaluation would be performed.

United States
Environmental Protection
Agency

Office of Wastewater
Management
Washington DC 20460

EPA/833B-99/002
August 1999



Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants

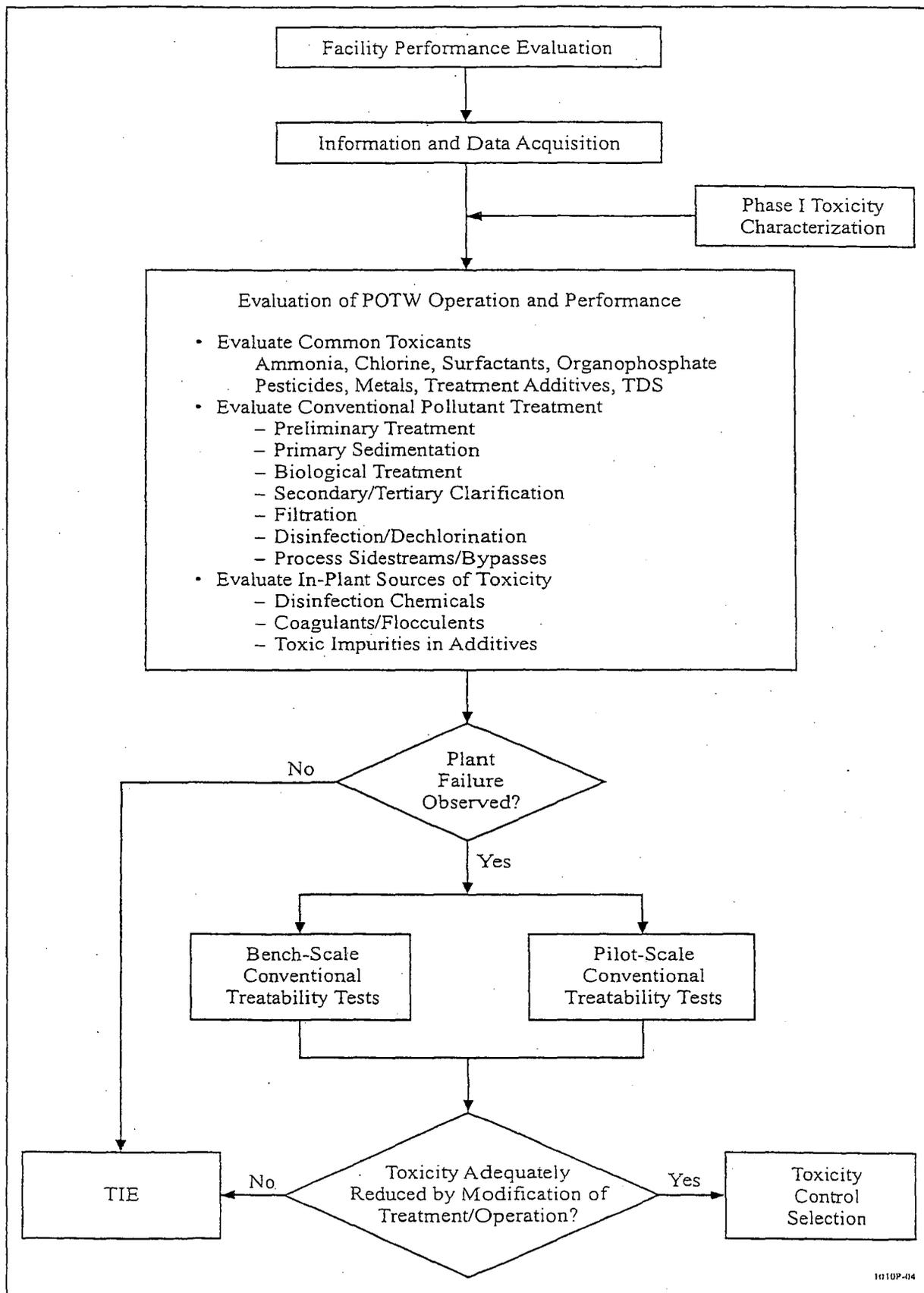


Figure 3-1. Flow diagram for a facility performance evaluation.

Table 2-1. Toxicants Identified in POTW Effluents

Toxicant Type	Level of Concern*	Potential Source	Information Needed to Assess Toxicity
Chlorine	0.05 to 1 milligram per liter (mg/L)	POTW disinfection process	TRC, temperature, and pH upon receipt of effluent sample and during toxicity test Toxicity degradation tests TIE Phase I tests†
Ammonia	5 mg/L as NH ₃ -N	Domestic and industrial sources POTW sludge processing sidestreams	Ammonia-nitrogen upon receipt of effluent sample pH, temperature, and salinity during toxicity test TIE Phase I tests†
Non-polar organics, such as organophosphate insecticides (e.g., diazinon, malathion, chlorpyrifos, and chlorfenvinphos)	Diazinon: 0.12–0.58 microgram per liter (µg/L) Chlorpyrifos: 0.03 µg/L	Homeowners, apartments, veterinarians, pest control, lawn care, and commercial businesses	High resolution analysis of organophosphate insecticides TIE Phase I tests†
Metals [e.g., cadmium (Cd), copper (Cu), chromium (Cr), lead (Pb), nickel (Ni), zinc (Zn)]	Varies	Treatment additives in POTW Industrial users	Dissolved metals, effluent hardness (mg/L as CaCO ₃), and alkalinity upon receipt of sample TIE Phase I tests†
Other treatment chemical additives such as dechlorination chemicals and polymers	Varies	Disinfection, dechlorination, sludge processing, and solids clarification in the POTW	Vendor information on toxicity of products Dosage rates Effluent characteristics that affect toxicity (e.g., pH) TIE Phase I tests†
Surfactants	Varies	Industrial users	Methylene blue active substances (MBAS) and cobalt thiocyanate active substances (CTAS) TIE Phase I tests†
Total dissolved solids (TDS)	1,000–6,000 µmos/cm depending on endpoint, species tested, and TDS constituents	Industrial users Sludge processing sidestreams	TDS, ion analysis, and anion/cation balance TIE Phase I tests†

* As referenced by USEPA (1992a) and D. Mount (personal communication, AScl Corp, Duluth, Minnesota, 1991) for chlorine; USEPA (1992a) for ammonia; TRAC Laboratories (1992), Bailey et al. (1997) for diazinon and chlorpyrifos; and USEPA (1992a) for TDS.

† The contribution of effluent constituents such as chlorine, ammonia, organic compounds, metals, and TDS to effluent toxicity can be most effectively evaluated using the TIE Phase I procedures described in Sections 3 and 4 of this guidance and the USEPA manuals (1991a, 1992a, 1996).

Table 2-2. Example POTW Design and Operation Data

1. NPDES permit requirements
 - a. Effluent limitations
 - b. Special conditions
 - c. Monitoring data and compliance history
 - d. Dilution studies or modeling results
2. POTW design criteria
 - a. Hydraulic loading capacities
 - b. Pollutant loading capacities
 - c. Biodegradation kinetics calculations and assumptions
3. Influent and effluent pollutant data
 - a. Ammonia
 - b. Residual chlorine
 - b. Other pollutants of concern such as non-polar organic compounds (e.g., organophosphate insecticides), metals, and TDS (see Table 2-1)
 - c. Conventional pollutant data, including five-day biochemical oxygen demand (BOD₅), chemical oxygen demand (COD), total organic carbon (TOC), total suspended solids (TSS), volatile suspended solids (VSS), total Kjeldahl nitrogen (TKN), ammonia-nitrogen (NH₃-N), total phosphorus (TP), orthophosphate (PO₄-P), and nitrate-nitrogen (NO₃-N), to evaluate treatment performance
 - d. Parameters, including pH, hardness, and alkalinity, to evaluate the toxicity of suspect compounds (see Table 2-1)
4. Process control data
 - a. Chemical usage for each treatment process (e.g., coagulants for primary sedimentation, lime for biological treatment, polymers for tertiary clarification; see Table 2-1)
 - b. Process control data for primary sedimentation (i.e., hydraulic loading capacity and BOD₅ and TSS removal)
 - c. Process control data for activated sludge [e.g., food to microorganism (F/M) ratio, MCRT, MLSS, sludge yield, removal efficiency of BOD₅, COD, TKN, NH₃-N, TP, PO₄-P, NO₃-N, and other pollutants specified in the permit].
 - d. Process control data for secondary and tertiary clarification [e.g., hydraulic and solids loading capacity, SVI, sludge blanket depth]
 - e. Number of process units online and number offline for maintenance
5. Operations Information
 - a. Reports on previous operation and maintenance evaluations, including engineering studies and USEPA and state compliance inspections
 - b. Operating logs
 - c. Standard operating procedures
 - d. Operation and maintenance practices (e.g., filter backwash procedures)
6. Process sidestream characterization data
 - a. Chemical usage for sludge processing, including thickener, digester, and dewatering processes
 - b. Pollutant data for sludge processing sidestreams, including ammonia, metals, organophosphate insecticides, and TDS (see Table 2-1)
 - c. Incinerator scrubber waste stream, including data on possible formation of cyanide (see discussion in Section 3)
 - d. Tertiary filter backwash
 - e. Cooling water
7. Wastewater bypass, combined sewer overflow (CSO), and sanitary sewer overflow (SSO) for bypasses or overflows that are discharged to the POTW effluent
 - a. Frequency
 - b. Volume

Michael Taylor

From: Drew Gantner [dgantner@pacificecorisk.com]
Sent: Wednesday, April 18, 2012 6:29 PM
To: Michael Taylor
Cc: Scott Ogle; Stephen L. Clark; Tony Morales; rholcomb@malagacwd.org
Subject: Re: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Michael,

In Stephen's absence, I'm forwarding Stephen's e-mail summarizing the results for the first round of Malaga's accelerated testing:

The results for the *Selenastrum* testing performed on the Malaga effluent sample collected on February 7 are as follows:

Lab Control:	2,600,000 cells/mL
12.5% effluent:	3,500,000 cells/mL
25% effluent:	4,200,000 cells/mL
50% effluent:	3,920,000 cells/mL
75% effluent:	3,460,000 cells/mL
100% effluent:	2,930,000 cells/mL

NOEC: 100% effluent

TUc: 1

In summary, the effluent was not toxic to *Selenastrum* growth.

Please contact me should you have any questions regarding the outcome of this test.

My regards,

Stephen

Stephen L. Clark
Vice President
Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
P: (707) 207-7760
P: (707) 207-7766 (direct line)
C: (707) 290-4854
F: (707) 207-7916
Stockton Office: (209) 952-1180

<http://www.pacificcorisk.com>

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Regards,

Drew Gantner

Sr. Aquatic Ecotoxicologist
Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA. 94534
Phone: (707) 207-7760 #774
Fax: (707) 207-7916

On Apr 18, 2012, at 5:56 PM, Stephen L. Clark wrote:

Please address in my absence.

My regards,

Stephen

Stephen L. Clark
Vice President
Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94533
P: 707-207-7766
C: 707-290-4854

Begin forwarded message:

From: "Michael Taylor" <mtaylor@ppeng.com>
Date: April 18, 2012 5:15:03 PM PDT
To: "Russ Holcomb" <rholcomb@malagacwd.org>, <slclark@pacificecorisk.com>
Cc: "Tony Morales" <tmorales@malagacwd.org>
Subject: RE: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

What were the results of the first accelerated test?

From: Russ Holcomb [mailto:rholcomb@malagacwd.org]
Sent: Wednesday, March 21, 2012 11:47 AM
To: Michael Taylor
Cc: 'Tony Morales'
Subject: FW: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Michael: Below is a message from Tony regarding the most recent Tertiary Eff sample collected. Please provide direction! Thanks, Russ

From: Tony Morales [mailto:tmorales@malagacwd.org]
Sent: Wednesday, March 21, 2012 11:09 AM
To: rholcomb@malagacwd.org
Subject: Fw: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Russ,

we failed the Tertiary Eff sample we collected on 3/13/2012 for Toxicity lab testing. I'm sending you a copy of the lab report and what needs to be done next.

Tony

----- Original Message -----

From: Stephen L. Clark
To: Tony Morales
Cc: Frank Cruz ; Drew Gantner
Sent: Wednesday, March 21, 2012 9:02 AM
Subject: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Hello Tony,

We have completed the *Selenastrum* testing for the Malaga County Water District sample collected March 13, 2012. The results were as follows:

Selenastrum Algal Growth Test

Control – 2,820,000 cells/ml
6.25% effluent – 3,440,000 cells/ml
12.5% effluent – 3,690,000 cells/ml
25% effluent – 3,220,000 cells/ml
50% effluent – 2,690,000 cells/ml
100% effluent – 2,270,000 cells/ml

The effluent was toxic at that 100% effluent treatment. The NOEC was 75% effluent, resulting in 1.3 TUc. The IC25 was 87% effluent.

Based on our review of the Malaga NPDES permit, these results would trigger the following requirements:

If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and initiate a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of the test results exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:

- 1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including TRE WET monitoring schedule;*
- 2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and*
- 3) A schedule for these actions.*

Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with EPA guidance.

PER has written many TRE Work Plans for our clients and often assists with designing TRE WET monitoring schedules. Please let me know if you will need assistance in this area.

Per the permit narrative above, Malaga does not need to continue with the current accelerated monitoring schedule but must "investigate and identify the cause(s) of toxicity, including TRE WET monitoring". It may be prudent to schedule a conference call so that we work through your needs and options.

My regards,

Stephen

Stephen L. Clark
Vice President
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Version: 9.0.927 / Virus Database: 271.1.1/4284 - Release Date: 03/21/12 00:34:00

Michael Taylor

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Version: 9.0.927 / Virus Database: 271.1.1/4284 - Release Date: 03/21/12 00:34:00

Michael Taylor

From: Russ Holcomb [rholcomb@malagacwd.org]
Sent: Tuesday, March 27, 2012 2:32 PM
To: Michael Taylor
Cc: 'Tony Morales'
Subject: FW: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Michael: As a follow-up to the failure of our most recent toxicity sampling test. Aide has requested a response report be filed from the District with in 75 days of the notification date, which occurred on Wednesday, 03/21/2012. Please let me know how soon this response report will be completed. Thanks, Russ

From: Russ Holcomb [mailto:rholcomb@malagacwd.org]
Sent: Thursday, March 22, 2012 2:18 PM
To: 'Tony Morales'
Subject: RE: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Received! Thanks Tony!

From: Tony Morales [mailto:tmorales@malagacwd.org]
Sent: Thursday, March 22, 2012 8:24 AM
To: rholcomb@malagacwd.org
Subject: Fw: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

----- Original Message -----

From: Tony Morales
To: Michael Taylor
Sent: Thursday, March 22, 2012 8:18 AM
Subject: Re: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Mike,
this was our second sample our first sample we got good results.
on our accelerated chronic toxicity testing.If you need any more .
information let

Tony

----- Original Message -----

From: Michael Taylor
To: Russ Holcomb
Cc: Tony Morales
Sent: Wednesday, March 21, 2012 11:49 AM
Subject: RE: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

First, we need to stop discharge.

Then, I will put together some steps to take.

It appears that this is an accelerated test. How many did we perform? Just to get me on the same page.

From: Russ Holcomb [mailto:rholcomb@malagacwd.org]
Sent: Wednesday, March 21, 2012 11:47 AM

To: Michael Taylor
Cc: 'Tony Morales'
Subject: FW: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Michael: Below is a message from Tony regarding the most recent Tertiary Eff sample collected. Please provide direction! Thanks, Russ

From: Tony Morales [mailto:tmorales@malagacwd.org]
Sent: Wednesday, March 21, 2012 11:09 AM
To: rholcomb@malagacwd.org
Subject: Fw: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Russ,
we failed the Tertiary Eff sample we collected on 3/13/2012 for Toxicity lab testing. I'm sending you a copy of the lab report and what needs to be done next.

Tony
----- Original Message -----

From: Stephen L. Clark
To: Tony Morales
Cc: Frank Cruz ; Drew Gantner
Sent: Wednesday, March 21, 2012 9:02 AM
Subject: Malaga: Results for Selenastrum testing performed on Malaga effluent collected March 13, 2012

Hello Tony,

We have completed the *Selenastrum* testing for the Malaga County Water District sample collected March 13, 2012. The results were as follows:

Selenastrum Algal Growth Test

Control – 2,820,000 cells/ml
6.25% effluent – 3,440,000 cells/ml
12.5% effluent – 3,690,000 cells/ml
25% effluent – 3,220,000 cells/ml
50% effluent – 2,690,000 cells/ml
100% effluent – 2,270,000 cells/ml

The effluent was toxic at that 100% effluent treatment. The NOEC was 75% effluent, resulting in 1.3 TUc. The IC25 was 87% effluent.

Based on our review of the Malaga NPDES permit, these results would trigger the following requirements:

If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and initiate a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of the test results exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:

- 1) *Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including TRE WET monitoring schedule;*
- 2) *Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and*

3) A schedule for these actions.

Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with EPA guidance.

PER has written many TRE Work Plans for our clients and often assists with designing TRE WET monitoring schedules. Please let me know if you will need assistance in this area.

Per the permit narrative above, Malaga does not need to continue with the current accelerated monitoring schedule but must "investigate and identify the cause(s) of toxicity, including TRE WET monitoring". It may be prudent to schedule a conference call so that we work through your needs and options.

My regards,

Stephen

Stephen L. Clark
Vice President
Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
P: (707) 207-7760
P: (707) 207-7766 (direct line)
C: (707) 290-4854
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Stockton Office: (209) 952-1180
<http://www.pacificcorisk.com>

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Version: 9.0.927 / Virus Database: 271.1.1/4284 - Release Date: 03/21/12 00:34:00

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Version: 9.0.927 / Virus Database: 271.1.1/4284 - Release Date: 03/21/12 00:34:00

MALAGA COUNTY WATER DISTRICT

TOXICITY EVALUATION INVESTIGATION (TRE)

Apr-12

Week of April 23, 2012

Sample for: Ammonia
Chlorine
Surfactants
Organophosphate pesticides
Metals
Treatment additives
Total Dissolved Solids (TDS)
pH

Sample Locations: WWTP effluent - after the filter and UV channel,
discharge the effluent to the pond

RockTenn
Air Products
PPG
Rio Bravo
Stratas
Fresno Truck Wash
Beacon Truck Wash
Inland Star
Sterling Coatings
Kinder Morgan

MALAGA COUNTY WATER DISTRICT
WASTEWATER TREATMENT PLANT
MONITORING AND REPORTING PROGRAM NO. 2008-0033
NPDES NO. CA 0084239

DATE SAMPLED	Accelerated Test (Y or N)	ACUTE TOXICITY (quarterly)	RESULT (% survival)	Ammonia (mg/l)	CHRONIC TOXICITY (quarterly)	Selenastrum capricornutum Cell Density RESULT (TUc)	Ceriodaphnia dubia Survival RESULT (TUc)	Ceriodaphnia dubia Reproduction RESULT (TUc)	Fathead Minnow Survival RESULT (TUc)	Fathead Minnow Biomass RESULT (TUc)	DATE Report Received	Require Accelerated Testing (Y or N)	COMMENTS	D/TE Report Sent to RWQCB
2008														
4/30/2008	N	X	100	<1.0								N		
6/9, 11, 13/2008	N			<1.0	X	1.0	1.0	1.0	1.0	1.0	7/28/2009	N		
12/15, 17, 19, 22/2008	N			<1.0	X	1.0	1.0	2.0	1.0	1.0		Y	for Ceriodaphnia dubia	
12/17/2008	N	X	100	<1.0								N		
2009														
3/9, 11, 13/2009	Y	X	95	<1.0			1.0	1.0				N		
3/23, 25, 27/2009	Y			<1.0	X	1.0	1.0	1.0	1.0	1.0		N		
4/6, 8, 10/2009	Y			<1.0			1.0	1.0			5/13/2009	N		
4/20, 22, 24/2009	Y			<1.0			1.0	1.0			5/28/2009	N		
6/15, 17, 19/2009	N			<1.0	X	1.0	see comments		1.0	1.0	7/16/2009	N	Retest for Ceriodaphnia dubia	
7/6, 8, 10/2009	N	X		<1.0			1.0	2.0				Y	for Ceriodaphnia dubia	
7/27, 29, 31/2009	Y			<1.0			1.0	1.0						
8/10, 12, 14/09	Y			<1.0			1.0	1.0			11/13/2009			
8/31/09, 9/2, 4/09	Y			<1.0			1.0	1.0			11/13/2009			
9/21, 23, 25/09	Y and Quarterly			<1.0	X	1.0	1.0	1.0	1.0	1.0		N		
9/25/2009	N	X	100	<1.0								N		
12/13, 15, 17/09	N			<1.0, 3.12, <1.0	X	1.0	1.0	1.0	1.0	1.0	1/18/2010	N		
12/14&16/2009	N	X	95	<1.0, 3.12										
2010														
3/15, 17, 20/2010	N			2.14, 2.92, <1.0	X	1.0	1.0	1.0	1.0	1.0	4/26/2010	N		
3/9/2010	N	X	90	8.2								N		
No Discharge in June														
9/20, 22, 24/10	N				X	2.0	1.0	1.0	1.0	1.0	10/13/2010	Y	for Selenastrum capricornutum	
9/24/2010	N	X	100											
10/19/2010	Y			0.146		1.0					10/27/2010	N		
11/2/2010	Y			0.031		1.0					11/27/2010	N		
11/16/2010	Y			<1.0		1.0					11/27/2010	N		
11/30/2010	Y					1.0					12/8/2010	N		
No Discharge in December														
2011														
3/21/2011	N	X	100	<1.0								N		
3/21, 23, 25/11	N				X	1.3	1.0	1.0	1.0	1.0	4/22/2011	Y	for Selenastrum capricornutum	
2012														
2/7/2012	Y					1.0						N		
3/13/2012	Y					1.3					3/21/2012	*	Require TRE	4/19/2012

Note: Accelerated Monitoring consists of four (4) Chronic Toxicity tests in a six week period. Results of Acute Toxicity from June, 2009 never received by the District.



WATER & WASTEWATER
MUNICIPAL INFRASTRUCTURE
LAND DEVELOPMENT
AGRICULTURAL SERVICES
DAIRY SERVICES
LAND SURVEYING & GIS
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DISTRICT MANAGEMENT

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FRESNO, CALIF.

286 W. Cromwell Avenue
Fresno, CA 93711-6168
559 449-2700
FAX 559 449-2715

September 3, 2008

MONITORING REPORT REVIEW

California Regional Water Quality Control Board
Central Valley Region
1685 "E" Street
Fresno, CA 93706-2020

Engineer _____

Compliance
Yes no

Date Reviewed _____

Attention: W. Dale Harvey, P.E., Senior Engineer

Subject: Malaga County Water District (MCWD)
Order No. R5-2008-0033, NPDES No. CA 0084239

Dear Mr. Harvey:

As required, please find attached a revised workplan for the Initial Investigative Toxicity Reduction Evaluation (TRE) for your review and approval. The MCWD has received results from the first round of Chronic and Acute Toxicity testing pursuant to the Waste Discharge Requirements.

A partial list of chemicals used at the facility was submitted previously.

Please contact me if you have any questions or if you require additional information.

Sincerely,

Michael G. Taylor, P.E.

MGT

Enclosure

cc: Malaga County Water District, Russ Holcomb, General Manager
2008 MCWD – RWQCB Correspondence File

Approved
Ltr to MCWD
3/11/09

**INITIAL INVESTIGATIVE
TOXICITY REDUCTION EVALUATION**

**WASTEWATER TREATMENT
AND DISPOSAL FACILITIES**

SEPTEMBER 2008

Prepared for:

Malaga County Water District

Prepared by:

Provost & Pritchard Engineering Group, Inc.
Fresno, California

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APPENDIX

EPA Manual – Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants

Figure 3-1

Table 2-1

Table 2-2

1 INTRODUCTION

The Malaga County Water District operates a wastewater treatment and disposal facility that is subject to Waste Discharge Requirements Order No. R5-2008-0033 and NPDES Permit No. CA0084239. The facility has a total design flow of 1.2 mgd. The facilities may discharge 0.85 mgd to evaporation/percolation ponds and 0.45 mgd of disinfected tertiary effluent to the Fresno Irrigation District Central Canal.

The facilities include a headworks (includes screw pumps, barminutor, and a grit chamber), a dissolved air flotation clarifier (DAF), three activated sludge aeration chambers, two aerobic sludge digesters, a sludge thickening tank, three secondary clarifiers, a tertiary filter and a chlorination/dechlorination tank. The facilities include three sludge drying beds, two of which are lined with soil cement.

1.1 WASTE DISCHARGE REQUIREMENTS

The waste discharge requirements require the District to prepare and submit an Initial Investigative Toxicity Reduction Evaluation Work Plan for approval. If the numeric toxicity monitoring trigger is exceeded the District would be required to begin accelerated monitoring and initiate a Toxicity Reduction Evaluation (TRE). The numeric toxicity monitoring trigger is >1 TUc, essentially, requiring 100 percent survival.

The District is required to conduct acute toxicity testing quarterly. In addition, the District is required to conduct chronic toxicity testing quarterly.

If the numeric toxicity monitoring trigger is exceeded the District shall initiate accelerated monitoring consisting of four (4) chronic toxicity tests in a six week period using the species that exhibited toxicity. If the results of the four (4) accelerated tests do not exceed the monitoring trigger, the District may cease accelerated monitoring and resume regular testing.

If the source of the toxicity is readily identified, the District shall make the necessary corrections and continue the accelerated testing until four (4) consecutive accelerated tests do not exceed the monitoring trigger.

If any of the accelerated toxicity tests exceed the monitoring trigger, the District shall cease accelerated monitoring and initiate the TRE. Within 30 days of notification that the test results exceed the monitoring trigger, the District shall submit a TRE Action Plan to the RWQCB.

1.2 EPA MANUAL

The District intends to utilize EPA Manual 833B-99/002 Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants as a guideline.

1.3 QA QC PROGRAM

The toxicity testing must include chain of custody documentation, results of the toxicant data with statistical output providing the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested. The testing shall include

toxicant control charts for each endpoint. The District shall report information on deviations or problems encountered and how they were dealt with.

2 INITIAL INVESTIGATIVE TOXICITY REDUCTION EVALUATION WORK PLAN

2.1 INVESTIGATION AND EVALUATION TECHNIQUES

2.1.a Initial Data

District staff shall obtain samples of the effluent and arrange for delivery of the samples to the laboratory for testing purposes. Sampling, preservation, and handling methods will be performed in accordance with instructions from the certified laboratory. Strict adherence to sampling and handling methods ensures consistency of the base data upon which all other actions are predicated.

The certified laboratory to perform the toxicity testing shall confirm that all testing has been performed in accordance to the laboratory's quality assurance program. For example, the first toxicity tests were conducted by Pacific EcoRisk as a subcontractor to Moore Twining Associates. Moore Twining Associates is the District's contracted testing laboratory.

The Acute and Chronic Toxicity results are reviewed by the laboratory subcontractor (Pacific EcoRisk), by the District's contracted laboratory (Moore Twining Associates), and the District prior to any subsequent action. All testing is performed per established standard methods and include the testing of a laboratory control sample.

2.1.b Self Monitoring Reports

The District prepares and submits to the RWQCB monthly self monitoring reports. The District is responsible to review the reports and identify inconsistencies that may provide information associated with effluent variability.

The District tracks trends of the various constituents that are required by the RWQCB. Variations of the influent or effluent constituents are reviewed as they may indicate toxicity influences.

Interviews of operating personnel may be conducted to supplement the information included in the reports.

2.1.c Pretreatment Program Monitoring

The District requires all non residential dischargers to obtain a Non Residential Waste Discharge Permit. The permit identifies any required pre-treatment facilities at the specific discharger, and monitoring and reporting deemed necessary. Review of the monitoring results from individual dischargers within the District would be performed to determine if toxic materials had been discharged to the sanitary sewer collection system.

All new non-residential connections must obtain a permit and provide operational information to the District. Similarly, any facility that has a change in operation is required to notify the District of the changes, for the purpose of modifying the pretreatment requirements as appropriate. In addition, the permits are subject to review and renewal on a regular basis to determine if changes to the permits and associated requirements are appropriate.

Interviews of the individual commercial and industrial dischargers may be conducted to supplement the information included in the reports.

2.2 IN-HOUSE TREATMENT EFFICIENCY AND GOOD HOUSEKEEPING PRACTICES

2.2.a Operation and Maintenance Procedures

In addition to the reports prepared and submitted to the RWQCB, the District operators perform operation and process control monitoring of the facilities as outlined in the Operation and Maintenance Manual. Operation or process control results beyond normal operating ranges may identify if any of the specific treatment components are not operating properly, thereby resulting in plant upset.

Good Housekeeping

The Operation and Maintenance Manual also identifies housekeeping for the facilities. In addition, the District recently conducted a survey of chemicals stored and used at the site. The information is also required for submittal to the County of Fresno Environmental Health Department for the purposes of maintaining proper handling and reporting of hazardous materials.

2.3 WHO WILL CONDUCT THE TOXICITY IDENTIFICATION EVALUATION, IF NECESSARY

The District, in conjunction with its contracted laboratory (Moore Twining Associates) and consulting engineer (Provost & Pritchard Engineering Group) will perform the evaluation. Additional experts or outside contractors may be utilized, if necessary, depending on the course of the evaluation.

3 DRAFT TRE ACTION PLAN

As stated previously, if the numeric toxicity monitoring trigger is exceeded the District shall initiate accelerated monitoring consisting of four (4) chronic toxicity tests in a six week period using the species that exhibited toxicity. If the results of the four (4) accelerated tests do not exceed the monitoring trigger, the District may cease accelerated monitoring and resume regular testing.

If the source of the toxicity is readily identified, the District shall make the necessary corrections and continue the accelerated testing until four (4) consecutive accelerated tests do not exceed the monitoring trigger.

If any of the accelerated toxicity tests exceed the monitoring trigger, the District shall cease accelerated monitoring and initiate the TRE. Within 30 days of notification that the test results exceed the monitoring trigger, the District shall submit a TRE Action Plan to the RWQCB.

The initial steps of the Action Plan are as follows (week 1 and 2):

3.1 INITIAL SAMPLE AND TEST:

Sample the effluent and test for common toxicants – ammonia, chlorine, surfactants, organophosphate pesticides, metals, treatment additives, TDS. Refer to Figure 3-1 from EPA Manual.

Sample the discharge from the Class 1A connections and test for common toxicants – ammonia, chlorine, surfactants, organophosphate pesticides, metals, treatment additives, TDS.

If the test results indicate toxic levels of any common toxicants, identify the source and proceed with corrective measures. Follow up with sampling and testing to confirm correction of the problem.

3.2 TREATMENT PLANT EVALUATION (week 2-4):

Confirm the treatment plant is operating according to established operating parameters:

3.3 FLOW DIAGRAM OVERVIEW

Perform an overview of the flow diagram to determine if changes have been implemented that might result in plant upset.

3.4 WWTP CRITERIA

Perform an overview of the operating criteria to determine if changes have been implemented that might result in plant upset.

3.5 WWTP PERFORMANCE

Perform a review of the actual operating performance of the various WWTP components to determine if there are sources of plant upset. Refer to Figure 3-1 from EPA Manual.

- A. Headworks
- B. DAF
- C. Activated Sludge
- D. Clarification
- E. Sludge
- F. Tertiary Filter
- G. Disinfection

A report summarizing the findings of the WWTP overview will be prepared by the District's consultant.

3.6 PRE-TREATMENT PROGRAM

Review the existing Class 1A and Class 1B dischargers to determine if changes to the discharge have occurred. Sampling and testing in addition to the initial sampling may be determined to be necessary.

A report summarizing the findings of the Pre-Treatment Program review will be prepared by the District's consultant.

3.7 EVALUATION OF TEST RESULTS AND PERFORMANCE REVIEW (week 5-7)

Upon receipt of the results of testing at the treatment facilities and pre-treatment facilities, the District may determine the specific toxic constituent(s) responsible for the failures. If the test results and facility performance are directly related, appropriate corrective measures would be performed. Sampling and testing would be conducted to verify that the source of the toxic constituent has been corrected.

A report summarizing the corrective measures and confirming the result will be prepared by the District or the District's consultant.

4 FURTHER ACTIONS

If necessary, additional actions associated with a Toxicity Identification Evaluation, Toxicity Source Evaluation, and Toxicity Control Evaluation would be performed.

United States
Environmental Protection
Agency

Office of Wastewater
Management
Washington DC 20460

EPA/833B-99/002
August 1999



Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants

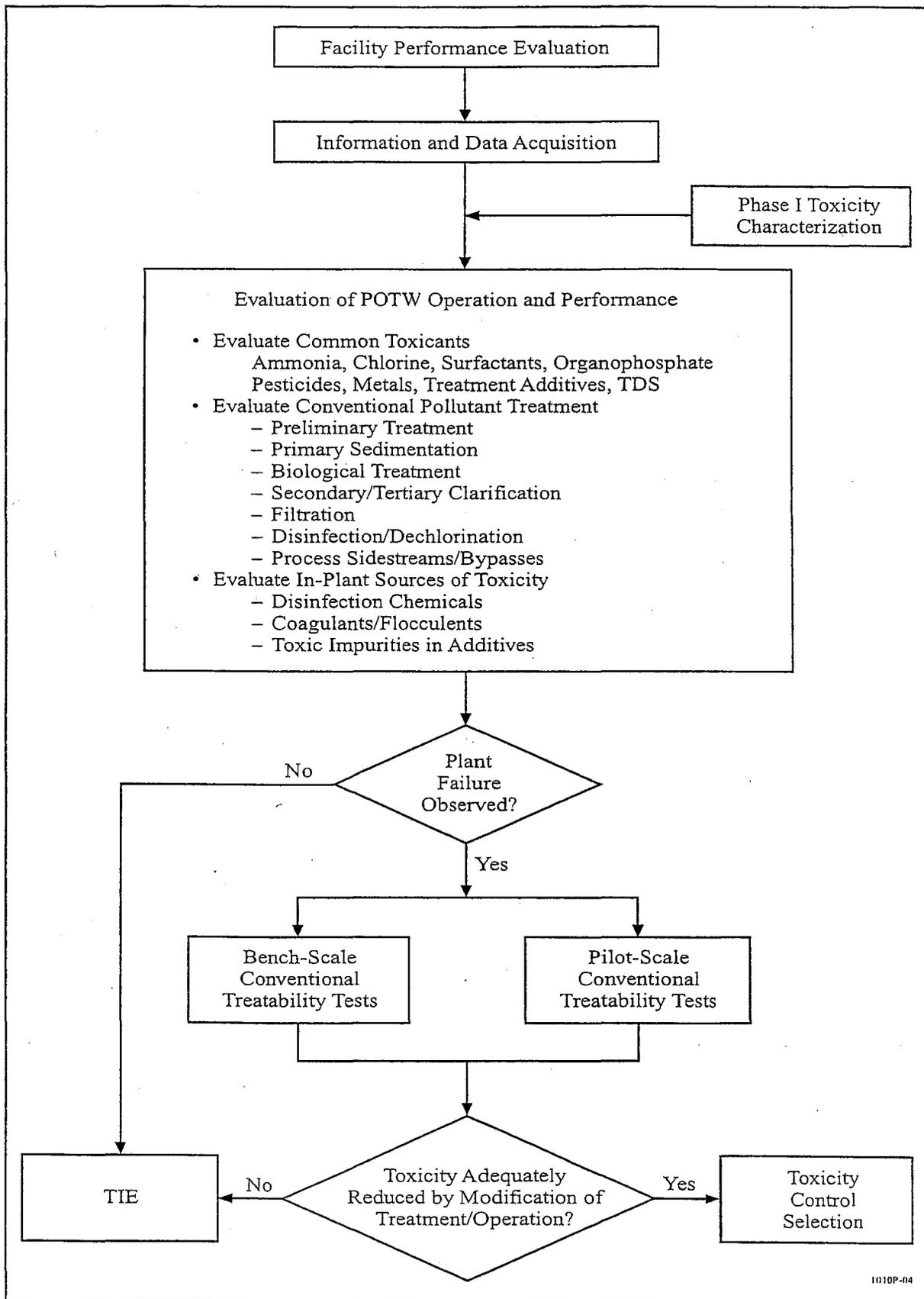


Figure 3-1. Flow diagram for a facility performance evaluation.

Table 2-1. Toxicants Identified in POTW Effluents

Toxicant Type	Level of Concern*	Potential Source	Information Needed to Assess Toxicity
Chlorine	0.05 to 1 milligram per liter (mg/L)	POTW disinfection process	TRC, temperature, and pH upon receipt of effluent sample and during toxicity test Toxicity degradation tests TIE Phase I tests†
Ammonia	5 mg/L as NH ₃ -N	Domestic and industrial sources POTW sludge processing sidestreams	Ammonia-nitrogen upon receipt of effluent sample pH, temperature, and salinity during toxicity test TIE Phase I tests†
Non-polar organics, such as organophosphate insecticides (e.g., diazinon, malathion, chlorpyrifos, and chlorfenvinphos)	Diazinon: 0.12–0.58 microgram per liter (µg/L) Chlorpyrifos: 0.03 µg/L	Homeowners, apartments, veterinarians, pest control, lawn care, and commercial businesses	High resolution analysis of organophosphate insecticides TIE Phase I tests†
Metals [e.g., cadmium (Cd), copper (Cu), chromium (Cr), lead (Pb), nickel (Ni), zinc (Zn)]	Varies	Treatment additives in POTW Industrial users	Dissolved metals, effluent hardness (mg/L as CaCO ₃), and alkalinity upon receipt of sample TIE Phase I tests†
Other treatment chemical additives such as dechlorination chemicals and polymers	Varies	Disinfection, dechlorination, sludge processing, and solids clarification in the POTW	Vendor information on toxicity of products Dosage rates Effluent characteristics that affect toxicity (e.g., pH) TIE Phase I tests†
Surfactants	Varies	Industrial users	Methylene blue active substances (MBAS) and cobalt thiocyanate active substances (CTAS) TIE Phase I tests†
Total dissolved solids (TDS)	1,000–6,000 µmhos/cm depending on endpoint, species tested, and TDS constituents	Industrial users Sludge processing sidestreams	TDS, ion analysis, and anion/cation balance TIE Phase I tests†

* As referenced by USEPA (1992a) and D. Mount (personal communication, AScl Corp, Duluth, Minnesota, 1991) for chlorine; USEPA (1992a) for ammonia; TRAC Laboratories (1992), Bailey et al. (1997) for diazinon and chlorpyrifos; and USEPA (1992a) for TDS.

† The contribution of effluent constituents such as chlorine, ammonia, organic compounds, metals, and TDS to effluent toxicity can be most effectively evaluated using the TIE Phase I procedures described in Sections 3 and 4 of this guidance and the USEPA manuals (1991a, 1992a, 1996).

Table 2-2. Example POTW Design and Operation Data

1. NPDES permit requirements
 - a. Effluent limitations
 - b. Special conditions
 - c. Monitoring data and compliance history
 - d. Dilution studies or modeling results
2. POTW design criteria
 - a. Hydraulic loading capacities
 - b. Pollutant loading capacities
 - c. Biodegradation kinetics calculations and assumptions
3. Influent and effluent pollutant data
 - a. Ammonia
 - b. Residual chlorine
 - b. Other pollutants of concern such as non-polar organic compounds (e.g., organophosphate insecticides), metals, and TDS (see Table 2-1)
 - c. Conventional pollutant data, including five-day biochemical oxygen demand (BOD₅), chemical oxygen demand (COD), total organic carbon (TOC), total suspended solids (TSS), volatile suspended solids (VSS), total Kjeldahl nitrogen (TKN), ammonia-nitrogen (NH₃-N), total phosphorus (TP), orthophosphate (PO₄-P), and nitrate-nitrogen (NO₃-N), to evaluate treatment performance
 - d. Parameters, including pH, hardness, and alkalinity, to evaluate the toxicity of suspect compounds (see Table 2-1)
4. Process control data
 - a. Chemical usage for each treatment process (e.g., coagulants for primary sedimentation, lime for biological treatment, polymers for tertiary clarification; see Table 2-1)
 - b. Process control data for primary sedimentation (i.e., hydraulic loading capacity and BOD₅ and TSS removal)
 - c. Process control data for activated sludge [e.g., food to microorganism (F/M) ratio, MCRT, MLSS, sludge yield, removal efficiency of BOD₅, COD, TKN, NH₃-N, TP, PO₄-P, NO₃-N, and other pollutants specified in the permit].
 - d. Process control data for secondary and tertiary clarification [e.g., hydraulic and solids loading capacity, SVI, sludge blanket depth]
 - e. Number of process units online and number offline for maintenance
5. Operations Information
 - a. Reports on previous operation and maintenance evaluations, including engineering studies and USEPA and state compliance inspections
 - b. Operating logs
 - c. Standard operating procedures
 - d. Operation and maintenance practices (e.g., filter backwash procedures)
6. Process sidestream characterization data
 - a. Chemical usage for sludge processing, including thickener, digester, and dewatering processes
 - b. Pollutant data for sludge processing sidestreams, including ammonia, metals, organophosphate insecticides, and TDS (see Table 2-1)
 - c. Incinerator scrubber waste stream, including data on possible formation of cyanide (see discussion in Section 3)
 - d. Tertiary filter backwash
 - e. Cooling water
7. Wastewater bypass, combined sewer overflow (CSO), and sanitary sewer overflow (SSO) for bypasses or overflows that are discharged to the POTW effluent
 - a. Frequency
 - b. Volume