



Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

OCT 03 2019

Ray Marler, Mayor
City of Headland
9 Park Street
Headland, AL 36345

RE: Draft Permit
NPDES Permit No. AL0027014
Jimmy Carr WWTP
Henry County, Alabama

Dear Mayor Marler:

Transmitted herein is a draft of the referenced permit.

We would appreciate your comments on the permit within **30 days** of the date of this letter. Please direct any comments of a technical or administrative nature to the undersigned.

By copy of this letter and the draft permit, we are also requesting comments within the same time frame from EPA.

Please be aware that Part I.C.1.c of your permit requires that you apply for participation in the Department's web-based Electronic Environmental (E2) Reporting System Program for submittal of DMRs upon issuance of this permit unless valid justification as to why you cannot participate is submitted in writing. Please also be aware that Part I.C.2.e of your permit requires that you apply for participation in the Department's web-based electronic environmental (E2) reporting system for submittal of SSOs within 30 days of coverage under this permit unless valid justification as to why you cannot participate is submitted in writing. After issuance of the permit, SSO hotline notifications and hard copy Form 415 SSO reports may be used only with the written approval from the Department. The E2 Program allows ADEM to electronically validate, acknowledge receipt, and upload data to the state's central wastewater database. This improves the accuracy of reported compliance data and reduces costs to both the regulated community and ADEM. The Permittee Participation Package may be downloaded online at <https://e2.adem.alabama.gov/npdes> or you may obtain a hard copy by submitting a written request or by emailing e2admin@adem.alabama.gov.

Please also be aware that Part IV. of your permit requires that you develop, implement, and maintain a Sanitary Sewer Overflow Response Plan.

The Alabama Department of Environmental Management encourages you to voluntarily consider pollution prevention practices and alternatives at your facility. Pollution Prevention may assist you in complying with effluent limitations, and possibly reduce or eliminate monitoring requirements.

Should you have any questions, please contact the undersigned by email at slee@adem.alabama.gov or by phone at (334) 274-4223.

Sincerely,

A handwritten signature in cursive script that reads "Sandra Lee".

Sandra Lee
Municipal Section
Water Division

/mfc
Enclosure

cc: Environmental Protection Agency Email
Ms. Elaine Snyder/U.S. Fish and Wildlife Service
Ms. Elizabeth Brown/Alabama Historical Commission
Advisory Council on Historic Preservation
Department of Conservation and Natural Resources





NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

PERMITTEE: CITY OF HEADLAND
9 PARK STREET
HEADLAND, ALABAMA 36345

FACILITY LOCATION: JIMMY CARR WWTP (0.500) MGD
U.S. HIGHWAY 431
HEADLAND, ALABAMA
HENRY COUNTY

PERMIT NUMBER: AL0027014

RECEIVING WATERS: WHITE BRANCH

In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1388 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, Code of Alabama 1975, §§ 22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§22-22A-1 to 22-22A-17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the Permittee is hereby authorized to discharge into the above-named receiving waters.

ISSUANCE DATE:

EFFECTIVE DATE:

EXPIRATION DATE:

Draft

**MUNICIPAL SECTION
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT**

TABLE OF CONTENTS

PART I	DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS	4
A.	DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS	4
1.	Outfall 0011 Discharge Limits	4
2.	Outfall 0011 Discharge Limits - (continued)	5
3.	Outfall 001T Discharge Limits - Toxicity	6
B.	DISCHARGE MONITORING AND RECORD KEEPING REQUIREMENTS	7
1.	Representative Sampling	7
2.	Measurement Frequency	7
3.	Test Procedures	7
4.	Recording of Results	7
5.	Records Retention and Production	8
6.	Reduction, Suspension or Termination of Monitoring and/or Reporting	8
7.	Monitoring Equipment and Instrumentation	8
C.	DISCHARGE REPORTING REQUIREMENTS	8
1.	Reporting of Monitoring Requirements	8
2.	Noncompliance Notifications and Reports	10
D.	OTHER REPORTING AND NOTIFICATION REQUIREMENTS	12
1.	Anticipated Noncompliance	12
2.	Termination of Discharge	12
3.	Updating Information	12
4.	Duty to Provide Information	12
E.	SCHEDULE OF COMPLIANCE	12
1.	Compliance with discharge limits	12
2.	Schedule	12
PART II	OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES	13
A.	OPERATIONAL AND MANAGEMENT REQUIREMENTS	13
1.	Facilities Operation and Maintenance	13
2.	Best Management Practices (BMP)	13
3.	Certified Operator	13
B.	OTHER RESPONSIBILITIES	13
1.	Duty to Mitigate Adverse Impacts	13
2.	Right of Entry and Inspection	13
C.	BYPASS AND UPSET	13
1.	Bypass	13
2.	Upset	14
D.	DUTY TO COMPLY WITH PERMIT, RULES, AND STATUTES	14
1.	Duty to Comply	14
2.	Removed Substances	14
3.	Loss or Failure of Treatment Facilities	14
4.	Compliance With Statutes and Rules	15
E.	PERMIT TRANSFER, MODIFICATION, SUSPENSION, REVOCATION, AND REISSUANCE	15
1.	Duty to Reapply or Notify of Intent to Cease Discharge	15
2.	Change in Discharge	15
3.	Transfer of Permit	15
4.	Permit Modification and Revocation	15
5.	Termination	16
6.	Suspension	16

7.	Stay	16
F.	COMPLIANCE WITH TOXIC POLLUTANT STANDARD OR PROHIBITION.....	17
G.	NOTICE TO DIRECTOR OF INDUSTRIAL USERS.....	17
H.	PROHIBITIONS	17
PART III ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS.....		18
A.	CIVIL AND CRIMINAL LIABILITY.....	18
1.	Tampering	18
2.	False Statements.....	18
3.	Permit Enforcement	18
4.	Relief from Liability	18
B.	OIL AND HAZARDOUS SUBSTANCE LIABILITY	18
C.	PROPERTY AND OTHER RIGHTS.....	18
D.	AVAILABILITY OF REPORTS	18
E.	EXPIRATION OF PERMITS FOR NEW OR INCREASED DISCHARGES	19
F.	COMPLIANCE WITH WATER QUALITY STANDARDS.....	19
G.	GROUNDWATER	19
H.	DEFINITIONS.....	19
I.	SEVERABILITY	22
PART IV SPECIFIC REQUIREMENTS, CONDITIONS, AND LIMITATIONS.....		23
A.	SLUDGE MANAGEMENT PRACTICES	23
1.	Applicability	23
2.	Submitting Information.....	23
3.	Reopener or Modification	23
B.	EFFLUENT TOXICITY LIMITATIONS AND BIOMONITORING REQUIREMENTS FOR CHRONIC TOXICITY.....	23
1.	Chronic Toxicity Test	23
2.	General Test Requirements.....	23
3.	Reporting Requirements	24
4.	Additional Testing Requirements	24
5.	Test Methods.....	24
6.	Effluent Toxicity Testing Reports.....	24
C.	TOTAL RESIDUAL CHLORINE (TRC) REQUIREMENTS.....	26
D.	PLANT CLASSIFICATION.....	26
E.	POLLUTANT SCANS.....	26
F.	SANITARY SEWER OVERFLOW RESPONSE PLAN.....	26
1.	SSO Response Plan	26
2.	SSO Response Plan Implementation.....	28
3.	Department Review of the SSO Response Plan.....	28
4.	SSO Response Plan Administrative Procedures	28

PART I DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

1. Outfall 0011 Discharge Limits

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from Outfall 0011, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Discharge Limitations*							Monitoring Requirements**			
	Monthly Average	Weekly Average	Monthly Average	Weekly Average	Daily Minimum	Daily Maximum	Percent Removal	(1) Sample Location	(2) Sample Type	(3) Measurement Frequency	(4) Seasonal
Oxygen, Dissolved (DO) 00300 I 0 0	*****	*****	*****	*****	6.0 mg/l	*****	*****	E	GRAB	F	*****
pH 00400 I 0 0	*****	*****	*****	*****	6.0 S.U.	8.5 S.U.	*****	E	GRAB	F	*****
Solids, Total Suspended 00530 I 0 0	375 lbs/day	562 lbs/day	90.0 mg/l	135 mg/l	*****	*****	*****	E	GRAB	F	*****
Solids, Total Suspended 00530 G 0 0	REPORT lbs/day	REPORT lbs/day	REPORT mg/l	REPORT mg/l	*****	*****	*****	I	GRAB	F	*****
Nitrogen, Ammonia Total (As N) 00610 I 0 0	16.6 lbs/day	25.0 lbs/day	4.0 mg/l	6.0 mg/l	*****	*****	*****	E	GRAB	F	S
Nitrogen, Ammonia Total (As N) 00610 I 0 0	41.7 lbs/day	62.5 lbs/day	10.0 mg/l	15.0 mg/l	*****	*****	*****	E	GRAB	F	W
Nitrogen, Kjeldahl Total (As N) 00625 I 0 0	REPORT lbs/day	REPORT lbs/day	REPORT mg/l	REPORT mg/l	*****	*****	*****	E	GRAB	G	S
Nitrite Plus Nitrate Total 1 Det. (As N) 00630 I 0 0	REPORT lbs/day	REPORT lbs/day	REPORT mg/l	REPORT mg/l	*****	*****	*****	E	GRAB	G	S
Phosphorus, Total (As P) 00665 I 0 0	REPORT lbs/day	REPORT lbs/day	REPORT mg/l	REPORT mg/l	*****	*****	*****	E	GRAB	G	S
Flow, In Conduit or Thru Treatment Plant 50050 I 0 0	REPORT MGD	*****	*****	*****	*****	REPORT MGD	*****	E	CONTIN	A	*****

* See Part II.C.1. (Bypass); Part II.C.2. (Upset)

** Monitoring Requirements

(1) Sample Location

- I – Influent
- E – Effluent
- X – End Chlorine Contact Chamber
- K - Percent Removal of the Monthly Avg. Influent Concentration from the Monthly Avg. Effluent Concentration.
- RS - Receiving Stream
- US – Upstream
- DS – Downstream
- MW – Monitoring Well
- SW – Storm Water

(2) Sample Type:

- CONTIN - Continuous
- INSTAN - Instantaneous
- COMP-8 - 8-Hour Composite
- COMP24 - 24-Hour Composite
- GRAB – Grab
- CALCTD - Calculated

(3) Measurement Frequency: See also Part I.B.2.

- A - 7 days per week
- B - 5 days per week
- C - 3 days per week
- D - 2 days per week
- E - 1 day per week
- F - 2 days per month
- G - 1 day per month
- H - 1 day per quarter
- J - Annual
- Q - For Effluent Toxicity Testing, see Provision IV.B.

(4) Seasonal Limits:

- S = Summer (April – October)
- W = Winter (November – March)
- ECS = E. coli Summer (May – October)
- ECW = E. coli Winter (November – April)

2. Outfall 0011 Discharge Limits - (continued)

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from Outfall 0011, which is described more fully in the Permittee's application. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Discharge Limitations*						Monitoring Requirements**				
	Monthly Average	Weekly Average	Monthly Average	Weekly Average	Daily Minimum	Daily Maximum	Percent Removal	(1) Sample Location	(2) Sample Type	(3) Measurement Frequency	(4) Seasonal
Chlorine, Total Residual See note (5) (6) 50060 1 0 0	*****	*****	0.023 mg/l	*****	*****	0.039 mg/l	*****	E	GRAB	F	*****
E. Coli 51040 1 0 0	*****	*****	126 col/100mL	*****	*****	298 col/100mL	*****	E	GRAB	F	ECS
E. Coli 51040 1 0 0	*****	*****	548 col/100mL	*****	*****	2507 col/100mL	*****	E	GRAB	F	ECW
BOD, Carbonaceous 05 Day, 20C 80082 1 0 0	62.5 lbs/day	93.8 lbs/day	15.0 mg/l	22.5 mg/l	*****	*****	*****	E	GRAB	F	S
BOD, Carbonaceous 05 Day, 20C 80082 1 0 0	104 lbs/day	156 lbs/day	25.0 mg/l	37.5 mg/l	*****	*****	*****	E	GRAB	F	W
BOD, Carbonaceous 05 Day, 20C 80082 G 0 0	REPORT lbs/day	REPORT lbs/day	REPORT mg/l	REPORT mg/l	*****	*****	*****	I	GRAB	F	*****
BOD, Carb-5 Day, 20 Deg C, Percent Remvl 80091 K 0 0	*****	*****	*****	*****	*****	*****	85.0%	K	CALCTD	G	*****
Solids, Suspended Percent Removal 81011 K 0 0	*****	*****	*****	*****	*****	*****	65.0%	K	CALCTD	G	*****

* See Part II.C.1. (Bypass); Part II.C.2. (Upset)

** Monitoring Requirements

(1) Sample Location

- I - Influent
- E - Effluent
- X - End Chlorine Contact Chamber
- K - Percent Removal of the Monthly Avg. Influent Concentration from the Monthly Avg. Effluent Concentration.
- RS - Receiving Stream
- US - Upstream
- DS - Downstream
- MW - Monitoring Well
- SW - Storm Water

(2) Sample Type:

- CONTIN - Continuous
- INSTAN - Instantaneous
- COMP-8 - 8-Hour Composite
- COMP24 - 24-Hour Composite
- GRAB - Grab
- CALCTD - Calculated

(3) Measurement Frequency: See also Part I.B.2.

- A - 7 days per week
- B - 5 days per week
- C - 3 days per week
- D - 2 days per week
- E - 1 day per week
- F - 2 days per month
- G - 1 day per month
- H - 1 day per quarter
- J - Annual
- Q - For Effluent Toxicity Testing, see Provision IV.B.

(4) Seasonal Limits:

- S = Summer (April - October)
- W = Winter (November - March)
- ECS = E. coli Summer (May - October)
- ECW = E. coli Winter (November - April)

(5) See Part IV.C. for Total Residual Chlorine (TRC). Monitoring for TRC is applicable if chlorine is utilized for disinfection purposes. If monitoring is not applicable during the monitoring period, enter “*9” or “NODI=9” (if hard copy) on the monthly DMR.

(6) A measure of TRC below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B (if hard copy) or *B on the discharge monitoring reports.

3. Outfall 001T Discharge Limits - Toxicity

Outfall 001T represents the same physical outfall as Outfall 0011, which his described more fully in the Permittee’s application. The Department uses the 001T designation for samples collected and analyzed for Toxicity testing. Such discharge shall be limited and monitored by the Permittee as specified below:

Parameter	Discharge Limitations*							Monitoring Requirements**			
	Monthly Average	Weekly Average	Monthly Average	Weekly Average	Daily Minimum	Daily Maximum	Percent Removal	(1) Sample Location	(2) Sample Type	(3) Measurement Frequency	(4) Seasonal
Toxicity, Ceriodaphnia Chronic 61426 1 0 0	*****	Pass = 0 Fail = 1	*****	*****	*****	*****	*****	E	COMP24	Q	*****
Toxicity, Pimephales Chronic 61428 1 0 0	*****	Pass = 0 Fail = 1	*****	*****	*****	*****	*****	E	COMP24	Q	*****

* See Part II.C.1. (Bypass); Part II.C.2. (Upset)

** Monitoring Requirements

(1) Sample Location

- I – Influent
- E – Effluent
- X – End Chlorine Contact Chamber
- K - Percent Removal of the Monthly Avg. Influent Concentration from the Monthly Avg. Effluent Concentration.
- RS - Receiving Stream
- US – Upstream
- DS – Downstream
- MW – Monitoring Well
- SW – Storm Water

(2) Sample Type:

- CONTIN - Continuous
- INSTAN - Instantaneous
- COMP-8 - 8-Hour Composite
- COMP24 - 24-Hour Composite
- GRAB – Grab
- CALCTD - Calculated

(3) Measurement Frequency: See also Part I.B.2.

- A - 7 days per week
- B - 5 days per week
- C - 3 days per week
- D - 2 days per week
- E - 1 day per week
- F - 2 days per month
- G - 1 day per month
- H - 1 day per quarter
- J - Annual
- Q - For Effluent Toxicity Testing, see Provision IV.B.

(4) Seasonal Limits:

- S = Summer (April – October)
- W = Winter (November – March)
- ECS = E. coli Summer (May – October)
- ECW = E. coli Winter (November – April)

B. DISCHARGE MONITORING AND RECORD KEEPING REQUIREMENTS

1. Representative Sampling

Sample collection and measurement actions shall be representative of the volume and nature of the monitored discharge and shall be in accordance with the provisions of this permit. The effluent sampling point shall be at the nearest accessible location just prior to discharge and after final treatment, unless otherwise specified in the permit.

2. Measurement Frequency

Measurement frequency requirements found in Provision I.A. shall mean:

- a. Seven days per week shall mean daily.
- b. Five days per week shall mean any five days of discharge during a calendar weekly period of Sunday through Saturday.
- c. Three days per week shall mean any three days of discharge during a calendar week.
- d. Two days per week shall mean any two days of discharge during a calendar week.
- e. One day per week shall mean any day of discharge during a calendar week.
- f. Two days per month shall mean any two days of discharge during the month that are no less than seven days apart. However, if discharges occur only during one seven-day period in a month, then two days per month shall mean any two days of discharge during that seven day period.
- g. One day per month shall mean any day of discharge during the calendar month.
- h. Quarterly shall mean any day of discharge during each calendar quarter.
- i. The Permittee may increase the frequency of sampling, listed in Provisions I.B.2.a through I.B.2.h; however, all sampling results are to be reported to the Department.

3. Test Procedures

For the purpose of reporting and compliance, Permittees shall use one of the following procedures:

- a. For parameters with an EPA established Minimum Level (ML), report the measured value if the analytical result is at or above the ML and report "0" for values below the ML. Test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and guidelines published pursuant to Section 304(h) of the FWPCA, 33 U.S.C. Section 1314(h). If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance, however should EPA approve a method with a lower minimum level during the term of this permit the Permittee shall use the newly approved method.
- b. For pollutants parameters without an established ML, an interim ML may be utilized. The interim ML shall be calculated as 3.18 times the Method Detection Level (MDL) calculated pursuant to 40 CFR Part 136, Appendix B.

Permittees may develop an effluent matrix-specific ML, where an effluent matrix prevents attainment of the established ML. However, a matrix specific ML shall be based upon proper laboratory method and technique. Matrix-specific MLs must be approved by the Department, and may be developed by the Permittee during permit issuance, reissuance, modification, or during compliance schedule.

In either case the measured value should be reported if the analytical result is at or above the ML and "0" reported for values below the ML.

- c. For parameters without an EPA established ML, interim ML, or matrix-specific ML, a report of less than the detection limit shall constitute compliance if the detection limit of all analytical methods is higher than the permit limit. For the purpose of calculating a monthly average, "0" shall be used for values reported less than the detection limit.

The Minimum Level utilized for procedures a and b above shall be reported on the Permittee's DMR. When an EPA approved test procedure for analysis of a pollutant does not exist, the Director shall approve the procedure to be used.

4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record the following information:

- a. The facility name and location, point source number, date, time and exact place of sampling;

- b. The name(s) of person(s) who obtained the samples or measurements;
 - c. The dates and times the analyses were performed;
 - d. The name(s) of the person(s) who performed the analyses;
 - e. The analytical techniques or methods used, including source of method and method number; and
 - f. The results of all required analyses.
5. Records Retention and Production
- a. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the application for this permit, for a period of at least three years from the date of the sample measurement, report or application. This period may be extended by request of the Director at any time. If litigation or other enforcement action, under the AWPCA and/or the FWPCA, is ongoing which involves any of the above records, the records shall be kept until the litigation is resolved. Upon the written request of the Director or his designee, the Permittee shall provide the Director with a copy of any record required to be retained by this paragraph. Copies of these records should not be submitted unless requested.
 - b. All records required to be kept for a period of three years shall be kept at the permitted facility or an alternate location approved by the Department in writing and shall be available for inspection.
6. Reduction, Suspension or Termination of Monitoring and/or Reporting
- a. The Director may, with respect to any point source identified in Provision I.A. of this permit, authorize the Permittee to reduce, suspend or terminate the monitoring and/or reporting required by this permit upon the submission of a written request for such reduction, suspension or termination by the Permittee, supported by sufficient data which demonstrates to the satisfaction of the Director that the discharge from such point source will continuously meet the discharge limitations specified in Provision I.A. of this permit.
 - b. It remains the responsibility of the Permittee to comply with the monitoring and reporting requirements of this permit until written authorization to reduce, suspend or terminate such monitoring and/or reporting is received by the Permittee from the Director.
7. Monitoring Equipment and Instrumentation
- All equipment and instrumentation used to determine compliance with the requirements of this permit shall be installed, maintained, and calibrated in accordance with the manufacturer's instructions or, in the absence of manufacturer's instructions, in accordance with accepted practices. At a minimum, flow measurement devices shall be calibrated at least once every 12 months.

C. DISCHARGE REPORTING REQUIREMENTS

1. Reporting of Monitoring Requirements
 - a. The Permittee shall conduct the required monitoring in accordance with the following schedule:
 - (1) **MONITORING REQUIRED MORE FREQUENTLY THAN MONTHLY AND MONTHLY** shall be conducted during the first full month following the effective date of coverage under this permit and every month thereafter.
 - (2) **QUARTERLY MONITORING** shall be conducted at least once during each calendar quarter. Calendar quarters are the periods of January through March, April through June, July through September, and October through December. The Permittee shall conduct the quarterly monitoring during the first complete calendar quarter following the effective date of this permit and is then required to monitor once during each quarter thereafter. Quarterly monitoring should be reported on the last DMR due for the quarter (i.e., March, June, September and December DMRs).
 - (3) **SEMIANNUAL MONITORING** shall be conducted at least once during the period of January through June and at least once during the period of July through December. The Permittee shall conduct the semiannual monitoring during the first complete calendar semiannual period following the effective date of this permit and is then required to monitor once during each semiannual period thereafter. Semiannual monitoring may be done anytime during the semiannual period, unless restricted elsewhere in this permit, but it should be reported on the last DMR due for the month of the semiannual period (i.e., June and December DMRs).
 - (4) **ANNUAL MONITORING** shall be conducted at least once during the period of January through December. The Permittee shall conduct the annual monitoring during the first complete calendar annual period following the effective date of this permit and is then required to monitor once during each annual period thereafter.

Annual monitoring may be done anytime during the year, unless restricted elsewhere in this permit, but it should be reported on the December DMR.

- b. The Permittee shall submit discharge monitoring reports (DMRs) on the forms approved by the Department and in accordance with the following schedule:
- (1) **REPORTS OF MORE FREQUENTLY THAN MONTHLY AND MONTHLY TESTING** shall be submitted on a monthly basis. The first report is due on the 28th day of the month following the month the permit becomes effective. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period, unless otherwise directed by the Department.
 - (2) **REPORTS OF QUARTERLY TESTING** shall be submitted on a quarterly basis. The first report is due on the 28th day of the month following the month the permit becomes effective. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period, unless otherwise directed by the Department.
 - (3) **REPORTS OF SEMIANNUAL TESTING** shall be submitted on a semiannual basis. The reports are due on the 28th day of JANUARY and the 28th day of JULY. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period, unless otherwise directed by the Department.
 - (4) **REPORTS OF ANNUAL TESTING** shall be submitted on an annual basis. Unless specified elsewhere in the permit, the first report is due on the 28th day of JANUARY. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period, unless otherwise directed by the Department.
- c. Except as allowed by Provision I.C.1.c.(1) or (2), the permittee shall submit all Discharge Monitoring Reports (DMRs) required by Provision I.C.1.b. by utilizing the Department's web-based Electronic Environmental (E2) Reporting System.
- (1) If the permittee is unable to complete the electronic submittal of DMR data due to technical problems originating with the Department's E2 Reporting System (this could include entry/submittal issues with an entire set of DMRs or individual parameters), the permittee is not relieved of their obligation to submit DMR data to the Department by the date specified in Provision I.C.1.b., unless otherwise directed by the Department.

If the E2 Reporting System is down on the 28th day of the month in which the DMR is due or is down for an extended period of time, as determined by the Department, when a DMR is required to be submitted, the permittee may submit the data in an alternate manner and format acceptable to the Department. Preapproved alternate acceptable methods include faxing, e-mailing, mailing, or hand-delivery of data such that they are received by the required reporting date. Within five calendar days of the E2 Reporting System resuming operation, the permittee shall enter the data into the E2 Reporting System, unless an alternate timeframe is approved by the Department. An attachment should be included with the E2 DMR submittal verifying the original submittal date (date of the fax, copy of dated e-mail, or hand-delivery stamped date), if applicable.
 - (2) The permittee may submit a request to the Department for a temporary electronic reporting waiver for DMR submittals. The waiver request should include the permit number; permittee name; facility/site name; facility address; name, address, and contact information for the responsible official or duly authorized representative; a detailed statement regarding the basis for requesting such a waiver; and the duration for which the waiver is requested. Approved electronic reporting waivers are not transferrable.

A permittee with an approved electronic reporting waiver for DMRs may submit hard copy DMRs for the period that the approved electronic reporting waiver request is effective. The permittee shall submit the Department-approved DMR forms to the address listed in Provision I.C.1.e.
 - (3) If a permittee is allowed to submit a hard copy DMR, the DMR must be legible and bear an original signature. Photo and electronic copies of the signature are not acceptable and shall not satisfy the reporting requirements of this permit.
 - (4) If the permittee, using approved analytical methods as specified in Provision I.B.2, monitors any discharge from a point source for a limited substance identified in Provision I.A. of this permit more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of values on the DMR and the increased frequency shall be indicated on the DMR.
 - (5) In the event no discharge from a point source identified in Provision I.A. of this permit and described more fully in the permittee's application occurs during a monitoring period, the permittee shall report "No Discharge" for such period on the appropriate DMR.
- d. All reports and forms required to be submitted by this permit, the AWPCA and the Department's Rules and Regulations, shall be electronically signed (or, if allowed by the Department, traditionally signed) by a "responsible

official" of the permittee as defined in ADEM Administrative Code Rule 335-6-6-.09 or a "duly authorized representative" of such official as defined in ADEM Administrative Code Rule 335-6-6-.09 and shall bear the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

- e. Discharge Monitoring Reports required by this permit, the AWPCA, and the Department's Rules that are being submitted in hard copy shall be addressed to:

**Alabama Department of Environmental Management
Environmental Data Section, Permits & Services Division
Post Office Box 301463
Montgomery, Alabama 36130-1463**

Certified and Registered Mail containing Discharge Monitoring Reports shall be addressed to:

**Alabama Department of Environmental Management
Environmental Data Section, Permits & Services Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400**

- f. All other correspondence and reports required to be submitted by this permit, the AWPCA, and the Department's Rules shall be addressed to:

**Alabama Department of Environmental Management
Municipal Section, Water Division
Post Office Box 301463
Montgomery, Alabama 36130-1463**

Certified and Registered Mail shall be addressed to:

**Alabama Department of Environmental Management
Municipal Section, Water Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400**

- g. If this permit is a reissuance, then the permittee shall continue to submit DMRs in accordance with the requirements of their previous permit until such time as DMRs are due as discussed in Part I.C.1.b. above.

2. Noncompliance Notifications and Reports

- a. The Permittee shall notify the Department if, for any reason, the Permittee's discharge:

- (1) Does not comply with any daily minimum or maximum discharge limitation for an effluent characteristic specified in Provision I.A. of this permit which is denoted by an "(X)";
- (2) Potentially threatens human health or welfare;
- (3) Threatens fish or aquatic life;
- (4) Causes an in-stream water quality criterion to be exceeded;
- (5) Does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a);
- (6) Contains a quantity of a hazardous substance that may be harmful to public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. Section 1321(b)(4);
- (7) Exceeds any discharge limitation for an effluent parameter listed in Part I.A. as a result of an unanticipated bypass or upset; or
- (8) Is an unpermitted direct or indirect discharge of a pollutant to a water of the state. (Note that unpermitted discharges properly reported to the Department under any other requirement are not required to be reported under this provision.)

The Permittee shall orally or electronically provide notification of any of the above occurrences, describing the circumstances and potential effects, to the Director or Designee within 24-hours after the Permittee becomes aware of the occurrence of such discharge. In addition to the oral or electronic notification, the Permittee shall submit a report to the Director or Designee, as provided in Provision I.C.2.c. or I.C.2.e., no later than five days after becoming aware of the occurrence of such discharge or occurrence.

- b. If, for any reason, the Permittee's discharge does not comply with any limitation of this permit, then the Permittee shall submit a written report to the Director or Designee, as provided in Provision I.C.2.c below. This report must be submitted with the next Discharge Monitoring Report required to be submitted by Provision I.C.1 of this permit after becoming aware of the occurrence of such noncompliance.
- c. Except for notifications and reports of notifiable SSOs which shall be submitted in accordance with the applicable Provisions of this permit, the Permittee shall submit the reports required under Provisions I.C.2.a. and b. to the Director or Designee on ADEM Form 421, available on the Department's website (<http://www.adem.state.al.us/DeptForms/Form421.pdf>). The completed Form must document the following information:
 - (1) A description of the discharge and cause of noncompliance;
 - (2) The period of noncompliance, including exact dates, times, and duration of the noncompliance. If the noncompliance is not corrected by the due date of the written report, then the Permittee shall provide an estimated date by which the noncompliance will be corrected; and
 - (3) A description of the steps taken by the Permittee and the steps planned to be taken by the Permittee to reduce or eliminate the noncompliant discharge and to prevent its recurrence.

d. Immediate notification

The Permittee shall provide notification to the Director, the public, the county health department, and any other affected entity such as public water systems, as soon as possible upon becoming aware of any notifiable sanitary sewer overflow. Notification to the Director shall be completed utilizing the Department's web-based electronic environmental SSO reporting system in accordance with Provision I.C.2.e.

- e. The Department is utilizing a web-based electronic environmental (E2) reporting system for notification and submittal of SSO reports. **If the Permittee is not already participating in the E2 Reporting System for SSO reports, the Permittee must apply for participation in the system within 30 days of coverage under this permit unless the Permittee submits in writing valid justification as to why it cannot participate and the Department approves in writing utilization of verbal notifications and hard copy SSO report submittals.** Once the Permittee is enrolled in the E2 Reporting System for SSO reports, the Permittee must utilize the system for notification and submittal of all SSO reports unless otherwise allowed by this permit. The Permittee shall include in the SSO reports the information requested by ADEM Form 415. In addition, the Permittee shall include the latitude and longitude of the SSO in the report except when the SSO is a result of an extreme weather event (e.g., hurricane). To participate in the E2 Reporting System for SSO reports, the Permittee Participation Package may be downloaded online at <https://e2.adem.alabama.gov/npdes>. If the E2 Reporting System is down (i.e., electronic submittal of SSO data cannot be completed due to technical problems originating with the Department's system), the Permittee is not relieved of its obligation to notify the Department or submit SSO reports to the Department by the required submittal date, and the Permittee shall submit the data in an alternate manner and format acceptable to the Department. Preapproved alternate acceptable methods include verbal reports, reports submitted via the SSO hotline, or reports submitted via fax, e-mail, mail, or hand-delivery such that they are received by the required reporting date. Within five calendar days of the E2 Reporting System resuming operation, the Permittee shall enter the data into the E2 Reporting System, unless an alternate timeframe is approved by the Department. For any alternate notification, records of the date, time, notification method, and person submitting the notification should be maintained by the Permittee. If a Permittee is allowed to submit SSO reports via an alternate method, the SSO report must be in a format approved by the Department and must be legible.
- f. The Permittee shall maintain a record of all known wastewater discharge points that are not authorized as permitted outfalls, including but not limited to SSOs. The Permittee shall include this record in its Municipal Water Pollution Prevention (MWPP) Annual Reports, which shall be submitted to the Department each year by May 31st for the prior calendar year period beginning January 1st and ending December 31st. The MWPP Annual Reports shall contain a list of all known wastewater discharge points that are not authorized as permitted outfalls and any discharges that occur prior to the headworks of the wastewater treatment plant covered by this permit. The Permittee shall also provide in the MWPP Annual Reports a list of any discharges reported during the applicable time period in accordance with Provision I.C.2.a. The Permittee shall include in its MWPP Annual Reports the following information for each known unpermitted discharge that occurred:
 - (1) The cause of the discharge;

- (2) Date, duration and volume of discharge (estimate if unknown);
- (3) Description of the source (e.g., manhole, lift station);
- (4) Location of the discharge, by latitude and longitude (or other appropriate method as approved by the Department);
- (5) The ultimate destination of the flow (e.g., surface waterbody, municipal separate storm sewer to surface waterbody). Location should be shown on a USGS quad sheet or copy thereof; and
- (6) Corrective actions taken and/or planned to eliminate future discharges.

D. OTHER REPORTING AND NOTIFICATION REQUIREMENTS

1. Anticipated Noncompliance

The Permittee shall give the Director written advance notice of any planned changes or other circumstances regarding a facility which may result in noncompliance with permit requirements.

2. Termination of Discharge

The Permittee shall notify the Director, in writing, when all discharges from any point source(s) identified in Provision I. A. of this permit have permanently ceased. This notification shall serve as sufficient cause for instituting procedures for modification or termination of the permit.

3. Updating Information

- a. The Permittee shall inform the Director of any change in the Permittee's mailing address or telephone number or in the Permittee's designation of a facility contact or office having the authority and responsibility to prevent and abate violations of the AWPCA, the Department's Rules and the terms and conditions of this permit, in writing, no later than ten (10) days after such change. Upon request of the Director or his designee, the Permittee shall furnish the Director with an update of any information provided in the permit application.
- b. If the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information with a written explanation for the mistake and/or omission.

4. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for modifying, revoking and re-issuing, suspending, or terminating this permit, in whole or in part, or to determine compliance with this permit.

E. SCHEDULE OF COMPLIANCE

1. Compliance with discharge limits

The Permittee shall achieve compliance with the discharge limitations specified in Provision I. A. in accordance with the following schedule:

COMPLIANCE SHALL BE ATTAINED ON THE EFFECTIVE DATE OF THIS PERMIT

2. Schedule

No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

PART II OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES**A. OPERATIONAL AND MANAGEMENT REQUIREMENTS**

1. Facilities Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit.

2. Best Management Practices (BMP)

- a. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.
- b. The Permittee shall prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 C.F.R. Section 112 if required thereby.
- c. The Permittee shall prepare, submit for approval and implement a BMP Plan for containment of any or all process liquids or solids, in a manner such that these materials do not present a significant potential for discharge, if so required by the Director or his designee. When submitted and approved, the BMP Plan shall become a part of this permit and all requirements of the BMP Plan shall become requirements of this permit.

3. Certified Operator

The Permittee shall not operate any wastewater treatment plant unless the competency of the operator to operate such plant has been duly certified by the Director pursuant to AWPCA, and meets the requirements specified in ADEM Administrative Code, Rule 335-10-1.

B. OTHER RESPONSIBILITIES

1. Duty to Mitigate Adverse Impacts

The Permittee shall promptly take all reasonable steps to mitigate and minimize or prevent any adverse impact on human health or the environment resulting from noncompliance with any discharge limitation specified in Provision I. A. of this permit, including such accelerated or additional monitoring of the discharge and/or the receiving waterbody as necessary to determine the nature and impact of the noncomplying discharge.

2. Right of Entry and Inspection

The Permittee shall allow the Director, or an authorized representative, upon the presentation of proper credentials and other documents as may be required by law to:

- (1) Enter upon the Permittee's premises where a regulated facility or activity or point source is located or conducted, or where records must be kept under the conditions of the permit;
- (2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permits;
- (3) Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and
- (4) Sample or monitor, for the purposes of assuring permit compliance or as otherwise authorized by the AWPCA, any substances or parameters at any location.

C. BYPASS AND UPSET

1. Bypass

- a. Any bypass is prohibited except as provided in b. and c. below:
- b. A bypass is not prohibited if:
 - (1) It does not cause any discharge limitation specified in Provision I. A. of this permit to be exceeded;
 - (2) It enters the same receiving stream as the permitted outfall; and
 - (3) It is necessary for essential maintenance of a treatment or control facility or system to assure efficient operation of such facility or system.
- c. A bypass is not prohibited and need not meet the discharge limitations specified in Provision I. A. of this permit if:
 - (1) It is unavoidable to prevent loss of life, personal injury, or severe property damage;

- (2) There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and
 - (3) The Permittee submits a written request for authorization to bypass to the Director at least ten (10) days prior to the anticipated bypass (if possible), the Permittee is granted such authorization, and the Permittee complies with any conditions imposed by the Director to minimize any adverse impact on human health or the environment resulting from the bypass.
- d. The Permittee has the burden of establishing that each of the conditions of Provision II. C. 1. b. or c. have been met to qualify for an exception to the general prohibition against bypassing contained in a. and an exemption, where applicable, from the discharge limitations specified in Provision I. A. of this permit.

2. Upset

- a. A discharge which results from an upset need not meet the discharge limitations specified in Provision I. A. of this permit if:
 - (1) No later than 24-hours after becoming aware of the occurrence of the upset, the Permittee orally reports the occurrence and circumstances of the upset to the Director or his designee; and
 - (2) No later than five (5) days after becoming aware of the occurrence of the upset, the Permittee furnishes the Director with evidence, including properly signed, contemporaneous operating logs, or other relevant evidence, demonstrating that:
 - (i) An upset occurred;
 - (ii) The Permittee can identify the specific cause(s) of the upset;
 - (iii) The Permittee's facility was being properly operated at the time of the upset; and
 - (iv) The Permittee promptly took all reasonable steps to minimize any adverse impact on human health or the environment resulting from the upset.
- b. The Permittee has the burden of establishing that each of the conditions of Provision II C. 2. a. of this permit have been met to qualify for an exemption from the discharge limitations specified in Provision I. A. of this permit.

D. DUTY TO COMPLY WITH PERMIT, RULES, AND STATUTES

1. Duty to Comply

- a. The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the AWPCA and the FWPCA and is grounds for enforcement action, for permit termination, revocation and reissuance, suspension, modification, or denial of a permit renewal application.
- b. The necessity to halt or reduce production or other activities in order to maintain compliance with the conditions of the permit shall not be a defense for a Permittee in an enforcement action.
- c. The discharge of a pollutant from a source not specifically identified in the permit application for this permit and not specifically included in the description of an outfall in this permit is not authorized and shall constitute noncompliance with this permit.
- d. The Permittee shall take all reasonable steps, including cessation of production or other activities, to minimize or prevent any violation of this permit or to minimize or prevent any adverse impact of any permit violation.
- e. Nothing in this permit shall be construed to preclude or negate the Permittee's responsibility to apply for, obtain, or comply with other Federal, State, or Local Government permits, certifications, or licenses or to preclude from obtaining other federal, state, or local approvals, including those applicable to other ADEM programs and regulations.

2. Removed Substances

Solids, sludges, filter backwash, or any other pollutant or other waste removed in the course of treatment or control of wastewaters shall be disposed of in a manner that complies with all applicable Department Rules.

3. Loss or Failure of Treatment Facilities

Upon the loss or failure of any treatment facilities, including but not limited to the loss or failure of the primary source of power of the treatment facility, the Permittee shall, where necessary to maintain compliance with the discharge limitations specified in Provision I. A. of this permit, or any other terms or conditions of this permit, cease, reduce, or otherwise control production and/or all discharges until treatment is restored. If control of discharge during loss or failure of the

primary source of power is to be accomplished by means of alternate power sources, standby generators, or retention of inadequately treated effluent, the Permittee must furnish to the Director within six months a certification that such control mechanisms have been installed.

4. Compliance With Statutes and Rules

- a. This permit has been issued under ADEM Administrative Code, Chapter 335-6-6. All provisions of this chapter, that are applicable to this permit, are hereby made a part of this permit. A copy of this chapter may be obtained for a small charge from the Office of General Counsel, Alabama Department of Environmental Management, 1400 Coliseum Boulevard Montgomery, Alabama 36110-2059.
- b. This permit does not authorize the noncompliance with or violation of any Laws of the State of Alabama or the United States of America or any regulations or rules implementing such laws. FWPCA, 33 U.S.C. Section 1319, and Code of Alabama 1975, Section 22-22-14.

E. PERMIT TRANSFER, MODIFICATION, SUSPENSION, REVOCATION, AND REISSUANCE

1. Duty to Reapply or Notify of Intent to Cease Discharge

- a. If the Permittee intends to continue to discharge beyond the expiration date of this permit, the Permittee shall file a complete permit application for reissuance of this permit at least 180 days prior to its expiration. If the Permittee does not intend to continue discharge beyond the expiration of this permit, the Permittee shall submit written notification of this intent which shall be signed by an individual meeting the signatory requirements for a permit application as set forth in ADEM Administrative Code Rule 335-6-6-.09.
- b. Failure of the Permittee to apply for reissuance at least 180 days prior to permit expiration will void the automatic continuation of the expiring permit provided by ADEM Administrative Code Rule 335-6-6-.06 and should the permit not be reissued for any reason any discharge after expiration of this permit will be an unpermitted discharge.

2. Change in Discharge

Prior to any facility expansion, process modification or any significant change in the method of operation of the Permittee's treatment works, the Permittee shall provide the Director with information concerning the planned expansion, modification or change. The Permittee shall apply for a permit modification at least 180 days prior to any facility expansion, process modification, any significant change in the method of operation of the Permittee's treatment works or other actions that could result in the discharge of additional pollutants or increase the quantity of a discharged pollutant or could result in an additional discharge point. This condition applies to pollutants that are or that are not subject to discharge limitations in this permit. No new or increased discharge may begin until the Director has authorized it by issuance of a permit modification or a reissued permit.

3. Transfer of Permit

This permit may not be transferred or the name of the Permittee changed without notice to the Director and subsequent modification or revocation and reissuance of the permit to identify the new Permittee and to incorporate any other changes as may be required under the FWPCA or AWPCA. In the case of a change in name, ownership or control of the Permittee's premises only, a request for permit modification in a format acceptable to the Director is required at least 30 days prior to the change. In the case of a change in name, ownership or control of the Permittee's premises accompanied by a change or proposed change in effluent characteristics, a complete permit application is required to be submitted to the Director at least 180 days prior to the change. Whenever the Director is notified of a change in name, ownership or control, he may decide not to modify the existing permit and require the submission of a new permit application.

4. Permit Modification and Revocation

- a. This permit may be modified or revoked and reissued, in whole or in part, during its term for cause, including but not limited to, the following:
 - (1) If cause for termination under Provision II. E. 5. of this permit exists, the Director may choose to revoke and reissue this permit instead of terminating the permit;
 - (2) If a request to transfer this permit has been received, the Director may decide to revoke and reissue or to modify the permit; or
 - (3) If modification or revocation and reissuance is requested by the Permittee and cause exists, the Director may grant the request.
- b. This permit may be modified during its term for cause, including but not limited to, the following:
 - (1) If cause for termination under Provision II. E. 5. of this permit exists, the Director may choose to modify this permit instead of terminating this permit;

- (2) There are material and substantial alterations or additions to the facility or activity generating wastewater which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit;
- (3) The Director has received new information that was not available at the time of permit issuance and that would have justified the application of different permit conditions at the time of issuance;
- (4) A new or revised requirement(s) of any applicable standard or limitation is promulgated under Sections 301(b)(2)(C), (D), (E), and (F), and 307(a)(2) of the FWPCA;
- (5) Errors in calculation of discharge limitations or typographical or clerical errors were made;
- (6) To the extent allowed by ADEM Administrative Code, Rule 335-6-6-.17, when the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued;
- (7) To the extent allowed by ADEM Administrative Code, Rule 335-6-6-.17, permits may be modified to change compliance schedules;
- (8) To agree with a granted variance under 301(c), 301(g), 301(h), 301(k), or 316(a) of the FWPCA or for fundamentally different factors;
- (9) To incorporate an applicable 307(a) FWPCA toxic effluent standard or prohibition;
- (10) When required by the reopener conditions in this permit;
- (11) When required under 40 CFR 403.8(e) (compliance schedule for development of pretreatment program);
- (12) Upon failure of the state to notify, as required by Section 402(b)(3) of the FWPCA, another state whose waters may be affected by a discharge permitted by this permit;
- (13) When required to correct technical mistakes, such as errors in calculation, or mistaken interpretations of law made in determining permit conditions; or
- (14) When requested by the Permittee and the Director determines that the modification has cause and will not result in a violation of federal or state law, regulations or rules.

5. Termination

This permit may be terminated during its term for cause, including but not limited to, the following:

- a. Violation of any term or condition of this permit;
- b. The Permittee's misrepresentation or failure to disclose fully all relevant facts in the permit application or during the permit issuance process or the Permittee's misrepresentation of any relevant facts at any time;
- c. Materially false or inaccurate statements or information in the permit application or the permit;
- d. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;
- e. The Permittee's discharge threatens human life or welfare or the maintenance of water quality standards;
- f. Permanent closure of the facility generating the wastewater permitted to be discharged by this permit or permanent cessation of wastewater discharge;
- g. New or revised requirements of any applicable standard or limitation that is promulgated under Sections 301(b)(2)(C), (D), (E), and (F), and 307(a)(2) of the FWPCA that the Director determines cannot be complied with by the Permittee; or
- h. Any other cause allowed by the ADEM Administrative Code, Chapter 335-6-6.

6. Suspension

This permit may be suspended during its term for noncompliance until the Permittee has taken action(s) necessary to achieve compliance.

7. Stay

The filing of a request by the Permittee for modification, suspension or revocation of this permit, in whole or in part, does not stay any permit term or condition.

F. COMPLIANCE WITH TOXIC POLLUTANT STANDARD OR PROHIBITION

If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), for a toxic pollutant discharged by the Permittee, and such standard or prohibition is more stringent than any discharge limitation on the pollutant specified in Provision I. A. of this permit or controls a pollutant not limited in Provision I. A. of this permit, this permit shall be modified to conform to the toxic pollutant effluent standard or prohibition, and the Permittee shall be notified of such modification. If this permit has not been modified to conform to the toxic pollutant effluent standard or prohibition before the effective date of such standard or prohibition, the Permittee shall attain compliance with the requirements of the standard or prohibition within the time period required by the standard or prohibition and shall continue to comply with the standard or prohibition until this permit is modified or reissued.

G. NOTICE TO DIRECTOR OF INDUSTRIAL USERS

1. The Permittee shall not allow the introduction of wastewater, other than domestic wastewater, from a new direct discharger prior to approval and permitting, if applicable, of the discharge by the Department.
2. The Permittee shall not allow an existing indirect discharger to increase the quantity or change the character of its wastewater, other than domestic wastewater, prior to approval and permitting, if applicable, of the increased discharge by the Department.
3. The Permittee shall report to the Department any adverse impact caused or believed to be caused by an indirect discharger on the treatment process, quality of discharged water, or quality of sludge. Such report shall be submitted within seven days of the Permittee becoming aware of the adverse impacts.

H. PROHIBITIONS

The Permittee shall not allow, and shall take effective enforcement action to prevent and terminate, the introduction of any of the following into its treatment works by industrial users:

1. Pollutants which create a fire or explosion hazard in the treatment works;
2. Pollutants which will cause corrosive structural damage to the treatment works, or dischargers with a pH lower than 5.0 s.u., unless the works are specifically designed to accommodate such discharges;
3. Solid or viscous pollutants in amounts which will cause obstruction of flow in sewers, or other interference with the treatment works;
4. Pollutants, including oxygen demanding pollutants, released in a discharge of such volume or strength as to cause interference in the treatment works;
5. Heat in amounts which will inhibit biological activity in the treatment plant resulting in interference or in such quantities that the temperature of the treatment plant influent exceeds 40°C (104° F) unless the treatment plant is designed to accommodate such heat; and
6. Pollutants in amounts which exceed any applicable pretreatment standard under Section 307 of FWPCA or any approved revisions thereof.

PART III ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS

A. CIVIL AND CRIMINAL LIABILITY

1. Tampering

Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained or performed under the permit shall, upon conviction, be subject to penalties as provided by the AWPCA.

2. False Statements

Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties as provided by the AWPCA.

3. Permit Enforcement

a. Any NPDES permit issued or reissued by the Department is a permit for the purpose of the AWPCA and the FWPCA, and as such, any terms, conditions, or limitations of the permit are enforceable under state and federal law.

b. Any person required to have a NPDES permit pursuant to ADEM Administrative Code Chapter 335-6-6 and who discharges pollutants without said permit, who violates the conditions of said permit, who discharges pollutants in a manner not authorized by the permit, or who violates applicable orders of the Department or any applicable rule or standard of the Department, is subject to any one or combination of the following enforcement actions under applicable state statutes:

- (1) An administrative order requiring abatement, compliance, mitigation, cessation, clean-up, and/or penalties;
- (2) An action for damages;
- (3) An action for injunctive relief; or
- (4) An action for penalties.

c. If the Permittee is not in compliance with the conditions of an expiring or expired permit the Director may choose to do any or all of the following provided the Permittee has made a timely and complete application for reissuance of the permit:

- (1) Initiate enforcement action based upon the permit which has been continued;
- (2) Issue a notice of intent to deny the permit reissuance. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;
- (3) Reissue the new permit with appropriate conditions; or
- (4) Take other actions authorized by these rules and AWPCA.

4. Relief from Liability

Except as provided in Provision II. C. 1. (Bypass) and Provision II. C. 2. (Upset), nothing in this permit shall be construed to relieve the Permittee of civil or criminal liability under the AWPCA or FWPCA for noncompliance with any term or condition of this permit.

B. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the FWPCA, 33 U.S.C. Section 1321.

C. PROPERTY AND OTHER RIGHTS

This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of federal, state, or local laws or regulations, nor does it authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any waters of the state or of the United States.

D. AVAILABILITY OF REPORTS

Except for data determined to be confidential under Code of Alabama 1975, Section 22-22-9(c), all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. Effluent data shall not be considered confidential.

E. EXPIRATION OF PERMITS FOR NEW OR INCREASED DISCHARGES

1. If this permit was issued for a new discharger or new source, this permit shall expire eighteen months after the issuance date if construction of the facility has not begun during the eighteen-month period.
2. If this permit was issued or modified to allow the discharge of increased quantities of pollutants to accommodate the modification of an existing facility and if construction of this modification has not begun during the eighteen month period after issuance of this permit or permit modification, this permit shall be modified to reduce the quantities of pollutants allowed to be discharged to those levels that would have been allowed if the modification of the facility had not been planned.
3. Construction has begun when the owner or operator has:
 - a. Begun, or caused to begin as part of a continuous on-site construction program:
 - (1) Any placement, assembly, or installation of facilities or equipment; or
 - (2) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which are necessary for the placement, assembly, or installation of new source facilities or equipment; or
 - b. Entered into a binding contractual obligation for the purpose of placement, assembly, or installation of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.
4. Final plans and specifications for a waste treatment facility at a new source or new discharger, or a modification to an existing waste treatment facility must be submitted to and examined by the Department prior to initiating construction of such treatment facility by the Permittee.
5. Upon completion of construction of waste treatment facilities and prior to operation of such facilities, the Permittee shall submit to the Department a certification from a registered professional engineer, licensed to practice in the State of Alabama, that the treatment facilities have been built according to plans and specifications submitted to and examined by the Department.

F. COMPLIANCE WITH WATER QUALITY STANDARDS

1. On the basis of the Permittee's application, plans, or other available information, the Department has determined that compliance with the terms and conditions of this permit should assure compliance with the applicable water quality standards.
2. Compliance with permit terms and conditions notwithstanding, if the Permittee's discharge(s) from point sources identified in Provision I. A. of this permit cause or contribute to a condition in contravention of state water quality standards, the Department may require abatement action to be taken by the Permittee in emergency situations or modify the permit pursuant to the Department's Rules, or both.
3. If the Department determines, on the basis of a notice provided pursuant to this permit or any investigation, inspection or sampling, that a modification of this permit is necessary to assure maintenance of water quality standards or compliance with other provisions of the AWPCA or FWPCA, the Department may require such modification, and, in cases of emergency, the Director may prohibit the discharge until the permit has been modified.

G. GROUNDWATER

Unless specifically authorized under this permit, this permit does not authorize the discharge of pollutants to groundwater. Should a threat of groundwater contamination occur, the Director may require groundwater monitoring to properly assess the degree of the problem, and the Director may require that the Permittee undertake measures to abate any such discharge and/or contamination.

H. DEFINITIONS

1. Average monthly discharge limitation – means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).
2. Average weekly discharge limitation - means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

3. Arithmetic Mean – means the summation of the individual values of any set of values divided by the number of individual values.
4. AWPCA – means the Alabama Water Pollution Control Act.
5. BOD – means the five-day measure of the pollutant parameter biochemical oxygen demand.
6. Bypass – means the intentional diversion of waste streams from any portion of a treatment facility.
7. CBOD – means the five-day measure of the pollutant parameter carbonaceous biochemical oxygen demand.
8. Daily discharge – means the discharge of a pollutant measured during any consecutive 24-hour period in accordance with the sample type and analytical methodology specified by the discharge permit.
9. Daily maximum – means the highest value of any individual sample result obtained during a day.
10. Daily minimum – means the lowest value of any individual sample result obtained during a day.
11. Day – means any consecutive 24-hour period.
12. Department – means the Alabama Department of Environmental Management.
13. Director – means the Director of the Department.
14. Discharge – means "[t]he addition, introduction, leaking, spilling or emitting of any sewage, industrial waste, pollutant or other waste into waters of the state". Code of Alabama 1975, Section 22-22-1(b)(9).
15. Discharge Monitoring Report (DMR) – means the form approved by the Director to accomplish reporting requirements of an NPDES permit.
16. DO – means dissolved oxygen.
17. 8HC – means 8-hour composite sample, including any of the following:
 - a. The mixing of at least 8 equal volume samples collected at constant time intervals of not more than 1 hour over a period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.
 - b. A sample continuously collected at a constant rate over period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.
18. EPA – means the United States Environmental Protection Agency.
19. FC – means the pollutant parameter fecal coliform.
20. Flow – means the total volume of discharge in a 24-hour period.
21. FWPCA – means the Federal Water Pollution Control Act.
22. Geometric Mean – means the Nth root of the product of the individual values of any set of values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered one (1).
23. Grab Sample – means a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the discharge.
24. Indirect Discharger – means a nondomestic discharger who discharges pollutants to a publicly owned treatment works or a privately owned treatment facility operated by another person.
25. Industrial User – means those industries identified in the Standard Industrial Classification manual, Bureau of the Budget 1967, as amended and supplemented, under the category "Division D – Manufacturing" and such other classes of significant waste producers as, by regulation, the Director deems appropriate.
26. MGD – means million gallons per day.
27. Monthly Average – means the arithmetic mean of all the composite or grab samples taken for the daily discharges collected in one month period. The monthly average for flow is the arithmetic mean of all flow measurements taken in a one month period.
28. New Discharger – means a person, owning or operating any building, structure, facility or installation:
 - a. From which there is or may be a discharge of pollutants;
 - b. From which the discharge of pollutants did not commence prior to August 13, 1979, and which is not a new source; and

- c. Which has never received a final effective NPDES permit for dischargers at that site.
29. NH₃-N – means the pollutant parameter ammonia, measured as nitrogen.
30. Notifiable sanitary sewer overflow – means an overflow, spill, release or diversion of wastewater from a sanitary sewer system that:
- Reaches a surface water of the State; or
 - May imminently and substantially endanger human health based on potential for public exposure including but not limited to close proximity to public or private water supply wells or in areas where human contact would be likely to occur.
31. Permit application – means forms and additional information that is required by ADEM Administrative Code Rule 335-6-6-.08 and applicable permit fees.
32. Point source – means "any discernible, confined and discrete conveyance, including but not limited to any pipe, channel, ditch, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, . . . from which pollutants are or may be discharged." Section 502(14) of the FWPCA, 33 U.S.C. Section 1362(14).
33. Pollutant – includes for purposes of this permit, but is not limited to, those pollutants specified in Code of Alabama 1975, Section 22-22-1(b)(3) and those effluent characteristics specified in Provision I. A. of this permit.
34. Privately Owned Treatment Works – means any devices or system which is used to treat wastes from any facility whose operator is not the operator of the treatment works, and which is not a "POTW".
35. Publicly Owned Treatment Works – means a wastewater collection and treatment facility owned by the State, municipality, regional entity composed of two or more municipalities, or another entity created by the State or local authority for the purpose of collecting and treating municipal wastewater.
36. Receiving Stream – means the "waters" receiving a "discharge" from a "point source".
37. Severe property damage – means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
38. Significant Source – means a source which discharges 0.025 MGD or more to a POTW or greater than five percent of the treatment work's capacity, or a source which is a primary industry as defined by the U.S. EPA or which discharges a priority or toxic pollutant.
39. TKN – means the pollutant parameter Total Kjeldahl Nitrogen.
40. TON – means the pollutant parameter Total Organic Nitrogen.
41. TRC – means Total Residual Chlorine.
42. TSS – means the pollutant parameter Total Suspended Solids.
43. 24HC – means 24-hour composite sample, including any of the following:
- The mixing of at least 8 equal volume samples collected at constant time intervals of not more than 2 hours over a period of 24 hours;
 - A sample collected over a consecutive 24-hour period using an automatic sampler composite to one sample. As a minimum, samples shall be collected hourly and each shall be no more than one twenty-fourth (1/24) of the total sample volume collected; or
 - A sample collected over a consecutive 24-hour period using an automatic composite sampler composited proportional to flow.
44. Upset – means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit discharge limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
45. Waters – means "[a]ll waters of any river, stream, watercourse, pond, lake, coastal, ground, or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership, or corporation unless such waters are used in interstate commerce." Code of Alabama 1975, Section 22-22-1(b)(2). Waters "include all navigable waters" as defined in Section 502(7) of the FWPCA, 22 U.S.C. Section 1362(7), which are within the State of Alabama.
46. Week – means the period beginning at twelve midnight Saturday and ending at twelve midnight the following Saturday.

47. Weekly (7-day and calendar week) Average – is the arithmetic mean of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. The calendar week is defined as beginning on Sunday and ending on Saturday. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for the calendar week shall be included in the data for the month that contains the Saturday.

I. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART IV SPECIFIC REQUIREMENTS, CONDITIONS, AND LIMITATIONS

A. SLUDGE MANAGEMENT PRACTICES

1. Applicability
 - a. Provisions of Provision IV.A. apply to a sewage sludge generated or treated in treatment works that is applied to agricultural and non-agricultural land, or that is otherwise distributed, marketed, incinerated, or disposed in landfills or surface disposal sites.
 - b. Provisions of Provision IV.A. do not apply to:
 - (1) Sewage sludge generated or treated in a privately owned treatment works operated in conjunction with industrial manufacturing and processing facilities and which receive no domestic wastewater.
 - (2) Sewage sludge that is stored in surface impoundments located at the treatment works prior to ultimate disposal.
2. Submitting Information
 - a. If applicable, the Permittee must submit annually with its Municipal Water Pollution Prevention (MWPP) report the following:
 - (1) Type of sludge stabilization/digestion method;
 - (2) Daily or annual sludge production (dry weight basis);
 - (3) Ultimate sludge disposal practice(s).
 - b. The Permittee shall provide sludge inventory data to the Director as requested. These data may include, but are not limited to, sludge quantity and quality reported in Provision IV.A.2.a as well as other specific analyses required to comply with State and Federal laws regarding solid and hazardous waste disposal.
 - c. The Permittee shall give prior notice to the Director of at least 30 days of any change planned in the Permittee's sludge disposal practices.
3. Reopener or Modification
 - a. Upon review of information provided by the Permittee as required by Provision IV.A.2. or, based on the results of an on-site inspection, the permit shall be subject to modification to incorporate appropriate requirements.
 - b. If an applicable "acceptable management practice" or if a numerical limitation for a pollutant in sewage sludge promulgated under Section 405 of FWPCA is more stringent than the sludge pollutant limit or acceptable management practice in this permit. This permit shall be modified or revoked or reissued to conform to requirements promulgated under Section 405. The Permittee shall comply with the limitations no later than the compliance deadline specified in applicable regulations as required by Section 405 of FWPCA.

B. EFFLUENT TOXICITY LIMITATIONS AND BIOMONITORING REQUIREMENTS FOR CHRONIC TOXICITY

1. Chronic Toxicity Test
 - a. The permittee shall perform short-term chronic toxicity tests on the wastewater at Outfall 0011.
 - b. The samples shall be diluted using appropriate control water to the Instream Waste Concentration (IWC) which is 49 effluent. The IWC is the actual concentration of effluent, after mixing, in the receiving stream during a 7-day, 10-year low flow period.
 - c. Any test result that shows a statistically significant reduction in survival, growth, or reproduction between the control and test samples at the 95% confidence level indicates chronic toxicity and shall constitute noncompliance with this permit.
2. General Test Requirements
 - a. A minimum of three (3) 24-hour composite samples shall be obtained for use in the above biomonitoring tests. Samples shall be collected every other day so that the laboratory receives water samples on the first, third, and fifth day of the seven-day test period. The holding time for each composite sample shall not exceed 36 hours. The control water shall be a water prepared in the laboratory in accordance with the EPA procedure described in EPA 821-R-02-013 (most current edition) or another control water selected by the Permittee and approved by the Department.
 - b. Test results shall be deemed unacceptable and the Permittee shall rerun the tests as soon as practical within the monitoring period for the following:
 - (1) For testing with *P. promelas*., effluent toxicity tests with control survival of less than 80% or if dry weight per surviving control organism is less than 0.25 mg;

- (2) For testing with *C. dubia*., if the number of young per surviving control organism is less than 15 or if less than 60% of surviving control females produce three broods; or
 - (3) If the other requirements of the EPA Test Procedure are not met.
 - c. In the event of an invalid test, upon subsequent completion of a valid test, the results of all tests, valid and invalid, are to be reported to the Department along with an explanation of the tests performed and the test results.
 - d. Toxicity tests shall be conducted for the duration of this permit in the month of **February, May, August, and November**. Should results from the Annual Toxicity test indicate that Outfall 001-1 exhibits chronic toxicity, then the Permittee must conduct the follow-up testing described in Part IV.B.4.a.
3. Reporting Requirements
- a. The Permittee shall notify the Department in writing within 48 hours after toxicity has been demonstrated by the scheduled test(s).
 - b. Biomonitoring test results obtained during each monitoring period shall be summarized and reported using the appropriate Discharge Monitoring Report (DMR) form approved by the Department. In accordance with Section 2 of this part, an effluent toxicity report containing the information in Sections 2 and 6 shall be included with the DMR. Two copies of the test results must be submitted to the Department no later than 28 days after the month that tests were performed.
4. Additional Testing Requirements
- a. If chronic toxicity is indicated (i.e., noncompliance with permit limit), then the Permittee must perform two additional valid chronic toxicity tests in accordance with these procedures to determine the extent and duration of the toxic condition. The toxicity tests shall run consecutively beginning on the first calendar week following the date that the Permittee became aware of the permit noncompliance. The results of these follow-up tests shall be submitted to the Department no later than 28 days following the month the tests were performed.
 - b. After evaluation of the results of the follow-up tests, the Department will determine if additional action is appropriate and may require additional testing and/or toxicity reduction measures. The permittee may be required to perform a Toxicity Identification Evaluation (TIE) and/or a Toxicity Reduction Evaluation (TRE). The TIE/TRE shall be performed in accordance with the most recent protocols and guidance outlined by EPA (e.g., EPA/600/2-88/062, EPA/600/R-92/080, EPA/600/R-91-003, EPA/600/R-92/081, EPA/833/B-99/022, and/or EPA/600/6-91/005F)
5. Test Methods
- The tests shall be performed in accordance with the latest edition of the "EPA Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." The Larval Survival and Growth Test, Method 1000.0, shall be used for the fathead minnow (*Pimephales promelas*) test and the Survival and Reproduction Test, Method 1002.0, shall be used for the cladoceran (*Ceriodaphnia dubia*) test.
6. Effluent Toxicity Testing Reports
- The following information shall be submitted with each DMR unless otherwise directed by the Department. The Department may at any times suspend or reinstate this requirement or may decrease or increase the frequency of submittals.
- a. Introduction
 - (1) Facility name, location and county
 - (2) Permit number
 - (3) Toxicity testing requirements of permit
 - (4) Name of receiving water body
 - (5) Contract laboratory information (if tests are performed under contract)
 - (a) Name of firm
 - (b) Telephone number
 - (c) Address
 - (6) Objective of test
 - b. Plant Operations
 - (1) Discharge Operating schedule (if other than continuous)
 - (2) Volume of discharge during sample collection to include Mean daily discharge on sample collection dates (MGD, CFS, GPM)
 - (3) Design flow of treatment facility at time of sampling

c. Source of Effluent and Dilution Water

(1) Effluent samples

- (a) Sampling point
- (b) Sample collection dates and times (to include composite sample start and finish times)
- (c) Sample collection method
- (d) Physical and chemical data of undiluted effluent samples (water temperature, pH, alkalinity, hardness, specific conductance, total residual chlorine (if applicable), etc.)
- (e) Lapsed time from sample collection to delivery
- (f) Lapsed time from sample collection to test initiation
- (g) Sample temperature when received at the laboratory

(2) Dilution Water

- (a) Source
- (b) Collection/preparation date(s) and time(s)
- (c) Pretreatment (if applicable)
- (d) Physical and chemical characteristics (water temperature, pH, alkalinity, hardness, specific conductance, etc.)

d. Test Conditions

- (1) Toxicity test method utilized
- (2) End point(s) of test
- (3) Deviations from referenced method, if any, and reason(s)
- (4) Date and time test started
- (5) Date and time test terminated
- (6) Type and volume of test chambers
- (7) Volume of solution per chamber
- (8) Number of organisms per test chamber
- (9) Number of replicate test chambers per treatment
- (10) Test temperature, pH, and dissolved oxygen as recommended by the method (to include ranges)
- (11) Specify if aeration was needed
- (12) Feeding frequency, amount, and type of food
- (13) Specify if (and how) pH control measures were implemented
- (14) Light intensity (mean)

e. Test Organisms

- (1) Scientific name
- (2) Life stage and age
- (3) Source
- (4) Disease(s) treatment (if applicable)

f. Quality Assurance

- (1) Reference toxicant utilized and source
- (2) Date and time of most recent chronic reference toxicant test(s), raw data, and current control chart(s). (The most recent chronic reference toxicant test shall be conducted within 30 days of the routine.)
- (3) Dilution water utilized in reference toxicant test
- (4) Results of reference toxicant test(s) (NOEC, IC25, etc.); report concentration-response relationship and evaluate test sensitivity
- (5) Physical and chemical methods utilized

g. Results

- (1) Provide raw toxicity data in tabular form, including daily records of affected organisms in each concentration (including controls) and replicate
- (2) Provide table of endpoints: NOECs, IC25s, PASS/FAIL, etc. (as required in the applicable NPDES permit)
- (3) Indicate statistical methods used to calculate endpoints
- (4) Provide all physical and chemical data required by method
- (5) Results of test(s) (NOEC, IC25, PASS/FAIL, etc.), report concentration-response relationship (definitive test only), report percent minimum significant difference (PMSD) calculated for sublethal endpoints determined by hypothesis testing.

h. Conclusions and Recommendations

- (1) Relationship between test endpoints and permit limits

(2) Actions to be taken

1/ Adapted from "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", Fourth Edition, October 2002 (EPA 821-R-02-013), Section 10, Report Preparation.

C. TOTAL RESIDUAL CHLORINE (TRC) REQUIREMENTS

1. If chlorine is not utilized for disinfection purposes, TRC monitoring under Part I of this Permit is not required. If TRC monitoring is not required (conditional monitoring), "*9" or "NODI = 9" (if hard copy) should be reported on the DMR forms.
2. Testing for TRC shall be conducted according to either the amperometric titration method or the DPD colorimetric method as specified in Section 408(C) or (E), Standards Methods for the Examination of Water and Wastewater, 18th edition. If chlorine is not detected prior to actual discharge to the receiving stream using one of these methods (i.e., the analytical result is less than the detection level), the Permittee shall report on the DMR form "*B", "NODI = B" (if hard copy), or "0". The Permittee shall then be considered to be in compliance with the daily maximum concentration limit for TRC.
3. This permit contains a maximum allowable TRC level in the effluent. The Permittee is responsible for determining the minimum TRC level needed in the chlorine contact chamber to comply with E.coli limits. The effluent shall be dechlorinated if necessary to meet the maximum allowable effluent TRC level.
4. The sample collection point for effluent TRC shall be at a point downstream of the chlorine contact chamber (downstream of dechlorination if applicable). The exact location is to be approved by the Director.

D. PLANT CLASSIFICATION

The Permittee shall report to the Director within 30 days of the effective date of this permit, the name, address and operator number of the certified wastewater operator in responsible charge of the facility. Unless specified elsewhere in this permit, this facility shall be classified in accordance with ADEM Admin. Code R. 335-10-1-.03.

E. POLLUTANT SCANS

The Permittee shall sample and analyze for the pollutants listed in 40 CFR 122 Appendix J Table 2. The Permittee shall provide data from a minimum of three samples collected within the four and one half years prior to submitting a permit application. Samples must be representative of the seasonal variation in the discharge from each outfall.

F. SANITARY SEWER OVERFLOW RESPONSE PLAN

1. SSO Response Plan

Within 120 days of the effective date of this Permit, the Permittee shall develop a Sanitary Sewer Overflow (SSO) Response Plan to establish timely and effective methods for responding to notifiable sanitary sewer overflows. The SSO Response Plan shall address each of the following:

a. General Information:

- (1) Approximate population of City/Town, if applicable
- (2) Approximate number of customers served by the Permittee
- (3) Identification of any subbasins designated by the Permittee, if applicable
- (4) Identification of estimated linear feet of sanitary sewers
- (5) Number of Pump/Lift Stations in the collection system

b. Responsibility Information:

- (1) The title(s) and contact information of key position(s) who will coordinate the SSO response, including information for a backup coordinator in the event that the primary SSO coordinator is unavailable. The SSO coordinator is the person responsible for assessing the SSO and initiating a series of response actions based on the type, severity, and destination of the SSO, except for routine SSOs for which the coordinator may pre-approve written procedures. Routine SSOs are those for which the corrective action procedures are generally consistent.
- (2) The title(s), and contact information of key position(s) who will respond to SSOs, including information for backup responder(s) in the event the primary responder(s) are unavailable (i.e., position(s) who provide notification to the Department, the public, the county health department, and other affected entities such as

public water systems; position(s) responsible for organizing crews for response; position(s) responsible for addressing public inquiries)

c. SSO and Surface Water Assessment

- (1) Identification of locations within the collection system at which an SSO is likely to occur (e.g., based upon historical SSOs, lift stations where electricity may be lost, etc.)
- (2) A map of the general collection system area, including identification of surface waterbodies and the location(s) of public drinking water source(s). Mapping of all collection system piping, pump stations, etc. is not required; however, if this information is already available, it should be included.
- (3) Identification of surface waterbodies within the collection system area which are classified as Swimming according to ADEM Admin. Code chap. 335-6-11. References available to assist in this requirement include: <http://www.adem.state.al.us/alEnviroRegLaws/files/Division6Vol1.pdf> and http://gis.adem.alabama.gov/ADEM_Dash/use_class/index.html
- (4) Identification of surface waterbodies within the collection system area which are not classified as Swimming as indicated in paragraph c above, but are known locally as areas where swimming occurs or as areas that are heavily recreated

d. Public Reporting of SSOs

- (1) Contact information for the public to report an SSO to the Permittee, during both normal and outside of normal business hours (e.g., telephone number, website, email address, etc.)
- (2) Information requested from the person reporting an SSO to assist the Permittee in identifying the SSO (e.g., date, time, location, contact information)
- (3) Procedures for communication of the SSO report to the appropriate positions for follow-up investigation and response, if necessary

e. Procedures to immediately notify the Department, the county health department, and other affected entities (such as public water systems) upon becoming aware of notifiable SSOs

f. Public Notification Methods for SSOs

- (1) A listing of methods that are feasible, as determined by the Permittee, for public notifications (e.g., flyers distributed to nearby residents; signs posted at the location of the SSO, where the SSO enters a water of the state, and/or at a central public location; signs posted at fishing piers, boat launches, parks, swimming waterbodies, etc.; website and/or social media notifications; local print or radio and broadcast media notifications; "opt in" email, text message, or automated phone message notifications)
 - (a) If signage is a feasible method for public notification, procedures for use and removal of signage (e.g., availability and maintenance of signs, appropriate duration of postings)
- (2) Minimum information to be included in public notifications (e.g., identification that an SSO has occurred, date, duration if known, estimated volume if known, location of the SSO by street address or other appropriate method, initial destination of the SSO)
- (3) Procedures developed by the Permittee for determining the appropriate public notification method(s) based upon the potential for public exposure to health risks associated with the SSO

g. Standard Procedures shall be developed by the Permittee and shall include, at a minimum:

- (1) General SSO Response Procedures (e.g., procedures for dispatching staff to assess/correct an SSO; procedures for routine SSO corrective actions such as those for sewer blockages, overflowing manholes, line breakages, pump station power failure, etc.; procedures for disinfection of affected area, if applicable);
- (2) Procedures for collection and proper disposal of the SSO, if feasible.
- (3) General procedures for coordinating instream water quality monitoring, including, but not limited to, procedures for mobilizing staff, collecting samples, and typical test methods should the Department or the Permittee

determine monitoring is appropriate following an SSO. Identification of a contractor who will collect and analyze the sample(s) may be listed in lieu of the procedures.

- (4) References to other documents (such as Standard Operating Procedures for SSO Responses) may be acceptable for this section; however, the referenced document shall be identified and shall be reviewed at a frequency of at least that required by the Administrative Procedures Section.
 - h. Date of the SSO Response Plan, dates of all modifications and/or reviews, the title and signature of the reviewer(s) for each date and the signature of the responsible official or the appropriate designee.
2. SSO Response Plan Implementation

Except as otherwise required by this Permit, the Permittee shall fully implement the SSO Response Plan as soon as practicable, but no later than 180 days after the effective date of this Permit.
 3. Department Review of the SSO Response Plan
 - a. When requested by the Director or his designee, the Permittee shall make the SSO Response Plan available for review by the Department.
 - b. Upon review, the Director or his designee may notify the Permittee that the SSO Response Plan is deficient and require modification of the Plan.
 - c. Within thirty days of receipt of notification, or an alternate timeframe as approved by the Department, the Permittee shall modify any SSO Response Plan deficiency identified by the Director or his designee and shall certify to the Department that the modification has been made.
 4. SSO Response Plan Administrative Procedures
 - a. The Permittee shall maintain a copy of the SSO Response Plan at the permitted facility or an alternate location approved by the Department in writing and shall make it available for inspection by the Department.
 - b. The Permittee shall make a copy of the SSO Response Plan available to the public upon written request within 30 days of such request. The Permittee may redact information which may present security issues, such as location of public water supplies, identification of specific details of vulnerabilities, employee information, etc.
 - c. The Permittee shall provide training for any personnel required to implement the SSO Response Plan and shall retain at the facility documentation of such training. This documentation shall be available for inspection by the Department. Training shall be provided for existing personnel prior to the date by which implementation of the SSO Response Plan is required and for new personnel as soon as possible. Should significant revisions be made to the SSO Response Plan, training regarding the revisions shall be conducted as soon as possible.
 - d. The Permittee shall complete a review and evaluation of the SSO Response Plan at least once every three years. Documentation of the SSO Response Plan review and evaluation shall be signed and dated by the responsible official or the appropriate designee as part of the SSO Response Plan.

NPDES PERMIT RATIONALE

NPDES Permit No: **AL0027014** Date: March 22, 2019

Permit Applicant: City of Headland
9 Park Street
Headland, Alabama 36345

Location: Jimmy Carr WWTP
U.S. Highway 431
Headland, Alabama 36345

Draft Permit is: Initial Issuance:
Reissuance due to expiration: X
Modification of existing permit:
Revocation and Reissuance:

Basis for Limitations: Water Quality Model: DO, CBOD₅, NH₃-N
Reissuance with no modification: pH, DO, TSS, TSS Percent
Removal, CBOD₅ Percent Removal
Instream calculation at 7Q10: 49%
Toxicity based: TRC
Secondary Treatment Levels: CBOD₅ Percent Removal
Other (described below): pH, E. Coli, TSS, TSS Percent Removal

Design Flow in Million Gallons per Day: 0.5 MGD

Major: No

Description of Discharge: Outfall Number 001;
Effluent discharge to White Branch,
which is classified as Fish and Wildlife.

Discussion: This permit is a reissuance due to expiration.

The pH limits for Outfall 0011 were developed consistent with the water-use designation of the receiving stream. The daily maximum pH limit is 8.5 s.u. and the daily minimum is 6.0 s.u. The monitoring frequency will be twice per month. Flow will be monitored continuously, 7 days per week.

The discharge limits for 5 Day Carbonaceous Biochemical Oxygen Demand (CBOD₅) and Ammonia as Nitrogen (NH₃N) for Outfall 0011 were developed by the Municipal Section based on a Waste Load Allocation (WLA) model performed by the Department's Water Quality Branch on May 15, 2018. CBOD₅, and NH₃N have summer (April – October) monthly average limits of 15.0 mg/l and 4.0 mg/l, respectively, and winter (November – March) monthly average limits of 25.0 mg/L and 10.0 mg/L, respectively. Dissolved Oxygen (DO) has a daily minimum limit of 6.0 mg/L. The monitoring frequencies will be twice per month. Jimmy Carr WWTP's previous permit had summer and winter ammonia limitations of 2.0 mg/L and 4.0 mg/L, respectively, and summer and winter limitations of CBOD₅ 9.0 mg/L and 15.0 mg/L, respectively; however, the increased limitations are not backsliding since the increase would result in water quality standards being attained and the revision is consistent with

the Department's antidegradation policy. In addition, the 2018 WLA is based on observations and flow measurements obtained during a period of drought instead of assuming no flow since the drainage area is less than 5 square miles.

The monthly average Total Suspended Solids (TSS) limit is established at 90.0 mg/l in accordance with ADEM's Permit Development Rationale and 40 CFR 133.105. A minimum percent removal of 85 percent based on 40 CFR 133.102 is imposed for CBOD₅ and a minimum percent removal of 65 percent based on 40 CFR 133.105 is imposed for TSS. The monitoring frequency will be twice per month for TSS. CBOD₅ and TSS percent removals will be calculated once per month.

The imposed E. coli limits were determined based on the water-use classification of the receiving stream. The White Branch is classified as Fish & Wildlife. The Department revised bacteriological criteria in ADEM Administrative Code R.335-6-10-.09, which became effective February 3, 2017. As a result, this permit has the updated E. coli limits and seasons that are consistent with the revised regulations. The imposed E. coli limits for May – October are 126 col/100ml (monthly average) and 298 col/100ml (daily maximum), while the limits for November – April are 548 col/100ml (monthly average) and 2507 col/100ml (daily maximum). The monitoring frequency will be twice per month.

This permit imposes monthly monitoring during the summer season (April-October) for the following nutrient-related parameters: Total Kjeldahl Nitrogen (TKN), Total Phosphorus (TP), and Nitrate plus Nitrite-Nitrogen (NO₂+NO₃-N). Monitoring for these nutrient-related parameters is imposed so that sufficient information will be available regarding the nutrient contribution from this point source, should it be necessary at some later time to impose nutrient limits on this discharge.

The Total Residual Chlorine (TRC) limits are based on calculations to ensure that acute and chronic toxic concentrations of TRC in the receiving stream are not exceeded. The TRC limits are 0.023 mg/L (monthly average) and 0.039 mg/L (daily maximum). The monitoring frequency will be twice per month. A measure of TRC below 0.05 mg/L shall be considered in compliance with the permit limitations above and should be reported as NODI=B (if hard copy) or *B on the discharge monitoring reports. Monitoring for TRC is applicable if chlorine is utilized for disinfection purposes. If monitoring is not applicable during the monitoring period, enter “*9” or “NODI=9”(if hard copy) on the monthly DMR. Jimmy Carr WWTP previously had monthly and daily maximum limits of 0.011 and 0.019, respectively, however, the increased limitations are not backsliding since the increase would result in water quality being standards being attained and the revision is consistent with the Department's antidegradation policy.

This Permittee treats a mixture of municipal and industrial wastewater. Therefore, the Department completed a Reasonable Potential Analysis (RPA) of the discharge based on the Permittee's application and historical DMR data. There was no background stream data available upstream of the facility's discharge. The RPA indicates that there is no reasonable potential for the facility's effluent to contribute to excursions of Alabama's in-stream water quality standards.

Because this facility has a significant industrial discharger, chronic toxicity testing with two species (Ceriodaphnia and Pimephales) is being imposed on this permit. Toxicity testing is imposed for both survival and life-cycle impairment (i.e., growth and reproduction). Testing at IWC of 49 percent is required quarterly during the months of February, May, August, and November. Should the results show chronic toxicity, the permittee would have to conduct follow-up testing as described in Part IV.B of the permit. Should the results from four consecutive quarterly testing periods indicate that Outfall 001T does not exhibit chronic toxicity, the Permittee may request that sampling frequency be reduced. Jimmy Carr WWTP's previous permit had an IWC of 100 percent. The lower IWC is not considered backsliding because the lower IWC would result in water quality standards being attained and the revision is consistent with the Department's antidegradation policy.

The receiving stream is the White Branch, a Tier I waterbody. The stream is not on the most recent 303(d) for impaired waterbodies. There are no approved TMDLs for this waterbody.

ADEM Administrative Rule 335-6-10-.12 requires applicants to new or expanded discharges to Tier II waters demonstrate that the proposed discharge is necessary for important economic or social development in the area in which the waters are located. The application submitted by the facility is not for a new or expanded discharge, so the applicant is not required to demonstrate that the discharge is necessary for economic and social development.

Prepared by: Sandra Lee

TOXICITY AND DISINFECTION RATIONALE

Facility Name:	Jimmy Carr WWTP	
NPDES Permit Number:	AL0027014	
Receiving Stream:	White Branch	
Facility Design Flow (Q _w):	0.500 MGD	
Receiving Stream 7Q ₁₀ :	0.810 cfs	
Receiving Stream 1Q ₁₀ :	0.610 cfs	
Winter Headwater Flow (WHF):	1.87 cfs	
Summer Temperature for CCC:	30 deg. Celsius	
Winter Temperature for CCC:	20 deg. Celsius	
Headwater Background NH ₃ -N Level:	0.11 mg/l	
Receiving Stream pH:	7.0 s.u.	
Headwater Background FC Level (summer):	N/A.	(Only applicable for facilities with diffusers.)
(winter):	N/A.	

The Stream Dilution Ratio (SDR) is calculated using the 7Q₁₀ for all stream classifications.

$$\text{Stream Dilution Ratio (SDR)} = \frac{Q_w}{7Q_{10} + Q_w} = 48.85\%$$

AMMONIA TOXICITY LIMITATIONS

Toxicity-based ammonia limits are calculated in accordance with the *Ammonia Toxicity Protocol* and the *General Guidance for Writing Water Quality Based Toxicity Permits*.

If the Limiting Dilution is less than 1%, the waterbody is considered stream-dominated and the CMC applies.

If the Limiting Dilution is greater than 1%, the waterbody is considered effluent-dominated and the CCC applies.

$$\begin{aligned} \text{Limiting Dilution} &= \frac{Q_w}{7Q_{10} + Q_w} \\ &= 48.85\% \qquad \qquad \qquad \text{Effluent-Dominated, CCC Applies} \end{aligned}$$

$$\begin{aligned} \text{Criterion Maximum Concentration (CMC):} & \quad \text{CMC} = 0.411 / (1 + 10^{(7.204 - \text{pH})}) + 58.4 / (1 + 10^{(\text{pH} - 7.204)}) \\ \text{Criterion Continuous Concentration (CCC):} & \quad \text{CCC} = [0.0577 / (1 + 10^{(7.688 - \text{pH})}) + 2.487 / (1 + 10^{(\text{pH} - 7.688)})] * \text{Min}[2.85, 1.45 * 10^{(0.028 * (25 - T))}] \end{aligned}$$

	<u>CMC</u>	<u>CCC</u>
Allowable Summer Instream NH ₃ -N:	36.09 mg/l	2.18 mg/l
Allowable Winter Instream NH ₃ -N:	36.09 mg/l	4.15 mg/l

$$\begin{aligned} \text{Summer NH}_3\text{-N Toxicity Limit} &= \frac{[(\text{Allowable Instream NH}_3\text{-N}) * (7Q_{10} + Q_w)] - [(\text{Headwater NH}_3\text{-N}) * (7Q_{10})]}{Q_w} \\ &= 4.4 \text{ mg/l NH}_3\text{-N at 7Q}_{10} \end{aligned}$$

$$\begin{aligned} \text{Winter NH}_3\text{-N Toxicity Limit} &= \frac{[(\text{Allowable Instream NH}_3\text{-N}) * (\text{WHF} + Q_w)] - [(\text{Headwater NH}_3\text{-N}) * (\text{WHF})]}{Q_w} \\ &= 14.0 \text{ mg/l NH}_3\text{-N at Winter Flow} \end{aligned}$$

The ammonia limits established in the permit will be the lesser of the DO-based ammonia limit (from the wasteload allocation model) or the toxicity limits calculated above.

	<u>DO-based NH₃-N limit</u>	<u>Toxicity-based NH₃-N limit</u>
Summer	2.00 mg/l NH₃-N	4.40 mg/l NH₃-N
Winter	4.00 mg/l NH₃-N	14.00 mg/l NH₃-N

Summer: The DO based limit of 2.00 mg/l NH₃-N applies.

Winter: The DO based limit of 4.00 mg/l NH₃-N applies.

TOXICITY TESTING REQUIREMENTS (REFERENCE: MUNICIPAL BRANCH TOXICITY PERMITTING STRATEGY)

The following factors trigger toxicity testing requirements:

1. Facility design flow is equal to or greater than 1.0 MGD (major facility).
2. There are significant industrial contributors (SID permits).

Acute toxicity testing is specified for A&I receiving streams, or for stream dilution ratios of 1% or less. Chronic toxicity testing is specified for all other situations requiring toxicity testing.

This is a minor facility (Qw < 1.0 MGD) with no SID permits. No toxicity testing is required.

Instream Waste Concentration (IWC) = $\frac{Q_w}{7Q_{10} + Q_w} = 48.85\%$ Note: This number will be rounded up for toxicity testing purposes.

DISINFECTION REQUIREMENTS

Bacteria limits are required, and will be the water quality limit for the receiving stream, except where diffusers are used the limit may be adjusted for the dilution provided by the diffuser.

See the attached Disinfection Guidance for applicable stream standards.

(Non-coastal limits apply)

Applicable Stream Classification: **Fish & Wildlife**

Disinfection Type: **Chlorination**

Limit calculation method: **Limits based on meeting stream standards at the point of discharge.**

	Stream Standard (colonies/100ml)	Effluent Limit (colonies/100ml)
<u>E. Coli (applies to Non-coastal and Shellfish Harvesting Coastal)</u>		
Monthly limit as monthly average (November through April):	548	548
Monthly limit as monthly average (May through October):	126	126
Daily Max (November through April):	2507	2507
Daily Max (May through October):	298	298
<u>Enterococci (applies to Coastal)</u>		
Monthly limit as geometric mean (October through May):	Not applicable	Not applicable
Monthly limit as geometric mean (June through September):	Not applicable	Not applicable
Daily Max (October through May):	Not applicable	Not applicable
Daily Max (June through September):	Not applicable	Not applicable

MAXIMUM ALLOWABLE CHLORINATION LIMITS

Toxicity-based chlorine limits are calculated in accordance with the General Guidance for Writing Water Quality Based Toxicity Permits.

Chlorine has been shown to be acutely toxic at 0.019 mg/l and chronically toxic at 0.011 mg/l.

Maximum allowable TRC in effluent:	0.023 mg/l (chronic)	(0.011)/(SDR)
Maximum allowable TRC in effluent:	0.039 mg/l (acute)	(0.019)/(SDR)

NOTE: A maximum chlorine limit will be imposed such that the instream concentration will not exceed acutely toxic concentrations in A & I streams and chronically toxic concentrations in all other streams, but may not exceed 1.0 mg/l.

Prepared By: Sandra Lee Date: 8/5/2019

$Q_d * C_d + Q_{d2} * C_{d2} + Q_s * C_s = Q_r * C_r$							Enter Max Daily Discharge as Reported by Applicant (C _d) Max	Enter Avg Daily Discharge as Reported by Applicant (C _d) Avg	Partition Coefficient (Stream / Lake)
ID	Pollutant	Carcinogen	Type	Background from upstream source (C _d) Daily Max	Background from upstream source (C _d) Monthly Ave	Background Instream (C _d) Daily Max	Background Instream (C _d) Monthly Ave		
1	Antimony		Metals	0	0	0	0	0	
2	Arsenic***	YES	Metals	0	0	0	0	0	0.574
3	Beryllium		Metals	0	0	0	0	0	
4	Cadmium		Metals	0	0	0	0	0	0.236
5	Chromium / Chromium III**		Metals	0	0	0	0	0	0.210
6	Chromium / Chromium VI**		Metals	0	0	0	0	0	
7	Copper**		Metals	0	0	0	0	2.09	1.59
8	Lead**		Metals	0	0	0	0	3.38	0.113279
9	Mercury**		Metals	0	0	0	0	0.00493	0.001915
10	Nickel**		Metals	0	0	0	0	1.11	1.04
11	Selenium		Metals	0	0	0	0	0	0
12	Silver		Metals	0	0	0	0	0	0
13	Thallium		Metals	0	0	0	0	0	0
14	Zinc**		Metals	0	0	0	0	0	0.330
15	Cyanide		Metals	0	0	0	0	0	0
16	Total Phenolic Compounds		Metals	0	0	0	0	0	0
17	Hardness (As CaCO3)		Metals	0	0	0	0	36900	32300
18	Acrolein		VOC	0	0	0	0	0	0
19	Acrylonitrile	YES	VOC	0	0	0	0	0	0
20	Aldrin	YES	VOC	0	0	0	0	0	0
21	Benzene*	YES	VOC	0	0	0	0	0	0
22	Bromoform*	YES	VOC	0	0	0	0	0	0
23	Carbon Tetrachloride*	YES	VOC	0	0	0	0	0	0
24	Chloroethane	YES	VOC	0	0	0	0	0	0
25	Chlorobenzene		VOC	0	0	0	0	0	0
26	Chlorodibromo-Methane*	YES	VOC	0	0	0	0	0	0
27	Chloroethane		VOC	0	0	0	0	0	0
28	2-Chloro-Ethylvinyl Ether		VOC	0	0	0	0	0	0
29	Chloroform*	YES	VOC	0	0	0	0	0	0
30	4,4'-DDD	YES	VOC	0	0	0	0	0	0
31	4,4'-DDE	YES	VOC	0	0	0	0	0	0
32	4,4'-DDT	YES	VOC	0	0	0	0	0	0
33	Dichloro-Dimethyl-Methane*	YES	VOC	0	0	0	0	0	0
34	1,1-Dichloroethane		VOC	0	0	0	0	0	0
35	1,2-Dichloroethane*	YES	VOC	0	0	0	0	0	0
36	Trans-1,2-Dichloro-Ethylene		VOC	0	0	0	0	0	0
37	1,1-Dichloroethylene*	YES	VOC	0	0	0	0	0	0
38	1,2-Dichloropropane		VOC	0	0	0	0	0	0
39	1,3-Dichloro-Propylene		VOC	0	0	0	0	0	0
40	Dieldrin	YES	VOC	0	0	0	0	0	0
41	Ethylbenzene		VOC	0	0	0	0	0	0
42	Methyl Bromide		VOC	0	0	0	0	0	0
43	Methyl Chloride		VOC	0	0	0	0	0	0
44	Methylene Chloride*	YES	VOC	0	0	0	0	0	0
45	1,1,2,2-Tetrachloro-Ethane*	YES	VOC	0	0	0	0	0	0
46	Tetrachloro-Ethylene*	YES	VOC	0	0	0	0	0	0
47	Toluene		VOC	0	0	0	0	0	0
48	Toxaphene	YES	VOC	0	0	0	0	0	0
49	Tributyltin (TBT)	YES	VOC	0	0	0	0	0	0
50	1,1,1-Trichloroethane		VOC	0	0	0	0	0	0
51	1,1,2-Trichloroethane*	YES	VOC	0	0	0	0	0	0
52	Trichloroethylene*	YES	VOC	0	0	0	0	0	0
53	Vinyl Chloride*	YES	VOC	0	0	0	0	0	0
54	p-Chloro-m-Cresol		Acids	0	0	0	0	0	0
55	2-Chlorophenol		Acids	0	0	0	0	0	0
56	2,4-Dichlorophenol		Acids	0	0	0	0	0	0
57	2,4-Dinitrophenol		Acids	0	0	0	0	0	0
58	4-Dinitro-o-Cresol		Acids	0	0	0	0	0	0
59	2,4-Dinitrophenol		Acids	0	0	0	0	0	0
60	4,6-Dinitro-2-methylphenol	YES	Acids	0	0	0	0	0	0
61	Dioxin (2,3,7,8-TCDD)	YES	Acids	0	0	0	0	0	0
62	2-Nitrophenol		Acids	0	0	0	0	0	0
63	4-Nitrophenol		Acids	0	0	0	0	0	0
64	Pentachlorophenol*	YES	Acids	0	0	0	0	0	0
65	Phenol		Acids	0	0	0	0	0	0
66	2,4,6-Trichlorophenol*	YES	Acids	0	0	0	0	0	0
67	Acenaphthene		Bases	0	0	0	0	0	0
68	Acenaphthylene		Bases	0	0	0	0	0	0
69	Anthracene		Bases	0	0	0	0	0	0
70	Benzidine		Bases	0	0	0	0	0	0
71	Benzo(a)Anthracene*	YES	Bases	0	0	0	0	0	0
72	Benzo(a)Pyrene*	YES	Bases	0	0	0	0	0	0
73	3,4-Benzo-Fluoranthene		Bases	0	0	0	0	0	0
74	Benzo(ghi)Perylene		Bases	0	0	0	0	0	0
75	Benzo(k)Fluoranthene		Bases	0	0	0	0	0	0
76	Bis (2-Chloroethoxy) Methane		Bases	0	0	0	0	0	0
77	Bis (2-Chloroethyl) Ether*	YES	Bases	0	0	0	0	0	0
78	Bis (2-Chloroisopropyl) Ether		Bases	0	0	0	0	0	0
79	Bis (2-Ethylhexyl) Phthalate*	YES	Bases	0	0	0	0	0	0
80	4-Bromophenyl Phenyl Ether		Bases	0	0	0	0	0	0
81	Butyl Benzyl Phthalate		Bases	0	0	0	0	0	0
82	2-Chloronaphthalene		Bases	0	0	0	0	0	0
83	4-Chlorophenyl Phenyl Ether		Bases	0	0	0	0	0	0
84	Chrysene*	YES	Bases	0	0	0	0	0	0
85	Di-n-Butyl Phthalate		Bases	0	0	0	0	0	0
86	Di-n-Octyl Phthalate		Bases	0	0	0	0	0	0
87	Dibenzo(a,h)Anthracene*	YES	Bases	0	0	0	0	0	0
88	1,2-Dichlorobenzene		Bases	0	0	0	0	0	0
89	1,3-Dichlorobenzene		Bases	0	0	0	0	0	0
90	1,4-Dichlorobenzene		Bases	0	0	0	0	0	0
91	3,3-Dichlorobenzidine*	YES	Bases	0	0	0	0	0	0
92	Diethyl Phthalate		Bases	0	0	0	0	0	0
93	Dimethyl Phthalate		Bases	0	0	0	0	0	0
94	2,4-Dinitrotoluene*	YES	Bases	0	0	0	0	0	0
95	2,6-Dinitrotoluene		Bases	0	0	0	0	0	0
96	1,2-Diphenylhydrazine		Bases	0	0	0	0	0	0
97	Endosulfan (alpha)	YES	Bases	0	0	0	0	0	0
98	Endosulfan (beta)	YES	Bases	0	0	0	0	0	0
99	Endosulfan sulfate	YES	Bases	0	0	0	0	0	0
100	Endrin	YES	Bases	0	0	0	0	0	0
101	Endrin Aldehyde	YES	Bases	0	0	0	0	0	0
102	Fluorobenzene		Bases	0	0	0	0	0	0
103	Fluorene		Bases	0	0	0	0	0	0
104	Heptachlor	YES	Bases	0	0	0	0	0	0
105	Heptachlor Epoxide	YES	Bases	0	0	0	0	0	0
106	Hexachlorobenzene*	YES	Bases	0	0	0	0	0	0
107	Hexachlorobutadiene*	YES	Bases	0	0	0	0	0	0
108	Hexachlorocyclohexan (alpha)	YES	Bases	0	0	0	0	0	0
109	Hexachlorocyclohexan (beta)	YES	Bases	0	0	0	0	0	0
110	Hexachlorocyclohexan (gamma)	YES	Bases	0	0	0	0	0	0
111	Hexachlorocyclopentadiene		Bases	0	0	0	0	0	0
112	Hexachloroethane		Bases	0	0	0	0	0	0
113	Indeno(1,2,3-Cl)Pyrene*	YES	Bases	0	0	0	0	0	0
114	Isophorone		Bases	0	0	0	0	0	0
115	Naphthalene		Bases	0	0	0	0	0	0
116	Nitrobenzene		Bases	0	0	0	0	0	0
117	N-Nitrosodi-N-Propylamine*	YES	Bases	0	0	0	0	0	0
118	N-Nitrosodi-N-Methylamine*	YES	Bases	0	0	0	0	0	0
119	N-Nitrosodi-N-Phenylamine*	YES	Bases	0	0	0	0	0	0
120	PCB-1016	YES	Bases	0	0	0	0	0	0
121	PCB-1221	YES	Bases	0	0	0	0	0	0
122	PCB-1232	YES	Bases	0	0	0	0	0	0
123	PCB-1242	YES	Bases	0	0	0	0	0	0
124	PCB-1248	YES	Bases	0	0	0	0	0	0
125	PCB-1254	YES	Bases	0	0	0	0	0	0
126	PCB-1260	YES	Bases	0	0	0	0	0	0
127	Phenanthrene		Bases	0	0	0	0	0	0
128	Pyrene		Bases	0	0	0	0	0	0
129	1,2,4-Trichlorobenzene		Bases	0	0	0	0	0	0

0.5	Enter Q _d = wastewater discharge flow from facility (MGD)
0.7736145	Q _d = wastewater discharge flow (cfs) (this value is calculated from the MGD)
0	Enter flow from upstream discharge Q _{d2} = background stream flow in MGD above point of discharge
0	Q _{d2} = background stream flow from upstream source (cfs)
0.81	Enter TQ10, Q _s = background stream flow in cfs above point of discharge
0.61	Enter or estimated, 1Q10, Q _s = background stream flow in cfs above point of discharge (1Q10 estimated at 75% of TQ10)
3.75	Enter Mean Annual Flow, Q _s = background stream flow in cfs above point of discharge
1.87	Enter TQ2, Q _s = background stream flow in cfs above point of discharge (For LWF class streams)
Enter to LAH	Enter C _s = background in-stream pollutant concentration in µg/l (assuming this is zero "0" unless there is data)
Q _d + Q _{d2} + Q _s	Q _r = resultant in-stream flow, after discharge
Calculated on other	C _r = resultant in-stream pollutant concentration in µg/l in the stream (after complete mixing occurs)
50	Enter, Background Hardness above point of discharge (assumed 50 South of Birmingham and 100 North of Birmingham)
7.00 s.u.c.	Enter, Background pH above point of discharge
YES	Enter, Is discharge to a stream? "YES" Other option would be to a Lake. (This changes the partition coefficients for the metals)

** Using Partition Coefficients

August 5, 2019

Jimmy Carr WWTP (AL0027014)

Total Recoverable Lead DMR Data

Monitor Pd End Date	Monthly Average (ug/l)	Daily Maximum (ug/l)
9/30/2014	0	0
10/31/2014	1.69	3.38
11/30/2014	0	0
12/31/2014	0	0
1/31/2015	0	0
2/28/2015	0	0
3/31/2015	2.07	2.07
4/30/2015	0	0
5/31/2015	0	0
6/30/2015	0	0
7/31/2015	0	0
8/31/2015	0	0
9/30/2015	0	0
10/31/2015	0	0
11/30/2015	0	0
12/31/2015	0	0
1/31/2016	0	0
2/29/2016	0	0
3/31/2016	0	0
4/30/2016	0	0
5/31/2016	0	0
6/30/2016	0	0
7/31/2016	0	0
8/31/2016	0	0
9/30/2016	0	0
10/31/2016	0	0
11/30/2016	0	0
12/31/2016	0	0
1/31/2017	0	0
2/28/2017	0	0
3/31/2017	0	0
4/30/2017	0	0
5/31/2017	0	0
6/30/2017	0	0
8/31/2017	0	0
7/31/2017	0	0
9/30/2017	0	0
10/31/2017	0	0
11/30/2017	0	0
12/31/2017	0	0

1/31/2018	0	0
2/28/2018	0	0
3/31/2018	0	0
4/30/2018	0	0
5/31/2018	0	0
6/30/2018	0	0
7/31/2018	0	0
8/31/2018	0	0
9/30/2018	0	0
10/31/2018	0	0
11/30/2018	0	0
12/31/2018	0	0
1/31/2019	0	0
2/28/2019	0	0
3/31/2019	0	0
4/30/2019	0	0
5/31/2019	0	0
6/30/2019	0	0
Application	1.05	1.14
Application	1.05	
Application	1.05	
	Monthly Average	0.113279
	Maximum	3.38

Jimmy Carr WWTP (AL0027014)

Total Recoverable Mercury DMR Data

Monitor Pd End Date	Monthly Average (ug/l)	Daily Maximum (ug/l)		
12/31/2014	0.00221	0.00221		
6/30/2015	0.000871	0.000871		
9/30/2015	0	0		
12/31/2015	0.00056	0.000563		
3/31/2016	0.0034	0.0034		
6/30/2016	0.000555	0.000555		
9/30/2016	0	0		
12/31/2016	0.00221	0.00221		
3/31/2017	0.0023	0.0023		
9/30/2017	0.002015	0.00202		
12/31/2017	0.000607	0.000607		
3/31/2018	0.00109	0.00109		
6/30/2018	0.00188	0.00188		
9/30/2018	0.00246	0.00246		
12/31/2018	0.00241	0.00241		
3/31/2019	0.00493	0.00493		
6/30/2019	0.00301	0.00301		
Application	0.0026	0.00292		
	0.0026			
	0.0026			
	Monthly Average	0.001915	Maximum	0.00493

*The Permittee did not perform the mercury testing for the 1st quarter of 2015. The Permittee reported NODI=E. The lab lost the Permittee results for the 2nd quarter of 2017, the Permittee reported NODI=E.

Waste Load Allocation Summary

REQUEST INFORMATION

Request Number: 3475

From: Stephanie Ammons In Branch/Section: Municipal
Date Submitted: 3/1/2018 Date Required: 4/1/2018 FUND Code: 605

Date Permit application received by NPDES program: []

Receiving: White Branch

Previous: White Branch

Facility Name: Headland Jimmy Carr WWTP (Name of Discharger-WQ will use to file)

Previous Discharger Name: []

River Basin: Chattahoochee Outfall Latitude: 31.323850 (decimal degrees)

*County: Henry Outfall Longitude: -85.337144 (decimal degrees)

Permit Number: AL0027014 Permit Type: Permit Reissuance

Permit: Active

Type of Discharger: MUNICIPAL

Do other discharges exist that may impact the model? Yes No

If yes, impacting dischargers names: Dothan Omussee Creek WWTP

Impacting dischargers permit numbers: AL0022764

Existing Discharge Design Flow: 0.5 MGD
Proposed Discharge Design Flow: 0.5 MGD
Note: The flow rates given should be those requested for modeling.

Comments Included

Yes No

Information Verified By: NSL

Year File Was Created: 2018

Response ID Number: 1645

Lat/Long Method: GPS

12 Digit HUC Code: 031300040603

Use Classification: F&W

Site Visit Completed? Yes No

Date of Site Visit: 3/12/2018

Waterbody Impaired?

Date of WLA Response: 5/15/2018

Antidegradation: Yes No

Approved TMDL?

Waterbody Tier Level: Tier I

Use Support Category: 3

Approval Date of TMDL: []

Waste Load Allocation Information

Modeled Reach Length: 4.19 Miles

Date of Allocation: 5/1/2018

Name of Model Used: SWQM

Allocation Type: 2 Seasons

Model Completed by: NSL

Type of Model Used: Desk-top

Allocation Developed by: Water Quality Branch

Waste Load Allocation Summary

Annual Effluent Limits	Conventional Parameters						Other Parameters								
	Qw		0.5		MGD		Qw		0.5		MGD				
	Season	Summer		Season	Winter		Season			Season					
Qw	MGD		From	May		From	Dec		From			From			
			Through	Nov		Through	Apr		Through			Through			
CBOD5			CBOD5	15		mg/l	CBOD5	25		TP			TP		
NH3-N			NH3-N	4		mg/l	NH3-N	10		TN			TN		
TKN			TKN			mg/l	TKN			TSS			TSS		
D.O.			D.O.	6		mg/l	D.O.	6							

"Monitor Only" Parameters for Effluent:				
Parameter	Frequency	Parameter	Frequency	
TP	Monthly (Apr - Oct)			
TKN	Monthly (Apr - Oct)			
NO2+NO3-N	Monthly (Apr - Oct)			

Water Quality Characteristics Immediately Upstream of Discharge				
Parameter	Summer		Winter	
CBODu	2	mg/l	2	mg/l
NH3-N	0.11	mg/l	0.11	mg/l
Temperature	30	°C	20	°C
pH	7	su	7	su

Hydrology at Discharge Location

Drainage Area Qualifier	Drainage Area	Value	Unit	Method Used to Calculate
Exact	Drainage Area	2.78	sq mi	Bingham Equation
	Stream 7Q10	0.81	cfs	75% of 7Q10
	Stream 1Q10	0.61	cfs	Bingham Equation
	Stream 7Q2	1.87	cfs	USACE Method
	Annual Average	3.75	cfs	

Comments and/or Notations Typically, the Water Quality Branch utilizes 7Q10 and 7Q2 values of 0 cfs for drainage areas less than 5 square miles. However, based on observations and flow measurements obtained during a period of drought, it is believed that the flows above are representative of low flow conditions at this discharge location.
The final segment of this model was completed using the output for the Omussee Creek Calibrated/Verified Model.

FORM 1 GENERAL		U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION Consolidated Permits Program <i>(Read the General Instructions before starting.)</i>	I EPA I.D. NUMBER F 1 2 13 14 15
LABEL ITEMS I. EPA I.D. NUMBER III. FACILITY NAME V. FACILITY MAILING ADDRESS VI. FACILITY LOCATION		<div style="border: 2px solid black; padding: 5px; display: inline-block;"> RECEIVED MAR 01 2019 PLEASE PLACE LABEL IN THIS SPACE IND / MUN BRANCH </div>	GENERAL INSTRUCTIONS If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI (except V-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.
II. POLLUTANT CHARACTERISTICS INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms .			
SPECIFIC QUESTIONS		Mark "X" YES NO FORM ATTACHED	Mark "X" YES NO FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S. ? (FORM 2A)		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	B. Does or will this facility (<i>either existing or proposed</i>) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S. ? (FORM 2B)
C. Is this a facility which currently results in discharges to waters of the U.S. , other than those described in A or B above? (FORM 2C)		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	D. Is this a proposed facility (<i>other than those described in A or B above</i>) which will result in a discharge to waters of the U.S. ? (FORM 2D)
E. Does or will this facility treat, store, or dispose of hazardous wastes ? (FORM 3)		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)
III. NAME OF FACILITY 1 SKIP Jimmy Carr Wastewater Treatment Plant			
IV. FACILITY CONTACT A. NAME & TITLE (last, first, & title) 2 Jason Singletary		B. PHONE (area code & no.) (334) 693-3365	
V. FACILITY MAILING ADDRESS A. STREET OR P.O. BOX 3 9 Park Street			
B. CITY OR TOWN 4 Headland		C. STATE AL	D. ZIP CODE 36345
VI. FACILITY LOCATION A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER 5 US Highway 431			
B. COUNTY NAME Henry			
C. CITY OR TOWN 6 Headland		D. STATE AL	E. ZIP CODE 36345
		F. COUNTY CODE (if known) 067	

CONTINUED FROM THE FRONT

VII SIC CODES (4-digit, in order of priority)			
A FIRST		B SECOND	
7	9131 (specify)	7	(specify)
C THIRD		D FOURTH	
7	(specify)	7	(specify)

VIII OPERATOR INFORMATION	
A NAME	B Is the name listed in Item VIII-A also the owner? <input type="checkbox"/> YES <input type="checkbox"/> NO
City of Headland	

C STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other," specify)		D PHONE (area code & no.)
F = FEDERAL S = STATE P = PRIVATE	M = PUBLIC (other than federal or state) O = OTHER (specify)	(334) 693-3365
M (specify) MUNICIPAL		

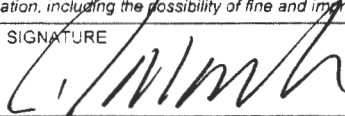
E STREET OR P O BOX
9 Park Street

F CITY OR TOWN	G STATE	H ZIP CODE	IX INDIAN LAND
Headland	AL	36345	Is the facility located on Indian lands? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

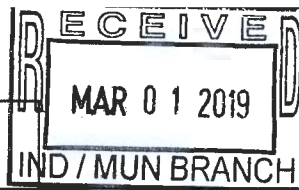
X EXISTING ENVIRONMENTAL PERMITS			
A NPDES (Discharges to Surface Water)		D PSD (Air Emissions from Proposed sources)	
9	N AL00207014	9	P
B UIC (Underground Injection of Fluids)		E OTHER (specify)	
9	U	9	(specify)
C RCRA (Hazardous Wastes)		E OTHER (specify)	
9	R	9	(specify)

XI MAP
 Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII NATURE OF BUSINESS (provide a brief description)
 Municipal Government

XIII CERTIFICATION (see instructions)		
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.		
A NAME & OFFICIAL TITLE (Type or print)	B SIGNATURE	C DATE SIGNED
Ray Marler, Mayor		2-28-19

COMMENTS FOR OFFICIAL USE ONLY



FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

FORM
2A
NPDES

NPDES FORM 2A APPLICATION OVERVIEW

APPLICATION OVERVIEW

Form 2A has been developed in a modular format and consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet. The Basic Application Information packet is divided into two parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 0.1 mgd must also complete Part B. Some applicants must also complete the Supplemental Application Information packet. The following items explain which parts of Form 2A you must complete.

BASIC APPLICATION INFORMATION:

- A. Basic Application Information for all Applicants.** All applicants must complete questions A.1 through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9 through A.12.
- B. Additional Application Information for Applicants with a Design Flow \geq 0.1 mgd.** All treatment works that have design flows greater than or equal to 0.1 million gallons per day must complete questions B.1 through B.6.
- C. Certification.** All applicants must complete Part C (Certification).

SUPPLEMENTAL APPLICATION INFORMATION:

- D. Expanded Effluent Testing Data.** A treatment works that discharges effluent to surface waters of the United States and meets one or more of the following criteria must complete Part D (Expanded Effluent Testing Data):
 1. Has a design flow rate greater than or equal to 1 mgd.
 2. Is required to have a pretreatment program (or has one in place), or
 3. Is otherwise required by the permitting authority to provide the information.
- E. Toxicity Testing Data.** A treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data):
 1. Has a design flow rate greater than or equal to 1 mgd.
 2. Is required to have a pretreatment program (or has one in place), or
 3. Is otherwise required by the permitting authority to submit results of toxicity testing.
- F. Industrial User Discharges and RCRA/CERCLA Wastes.** A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete Part F (Industrial User Discharges and RCRA/CERCLA Wastes). SIUs are defined as:
 1. All industrial users subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
 2. Any other industrial user that:
 - a. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions); or
 - b. Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
 - c. Is designated as an SIU by the control authority.
- G. Combined Sewer Systems.** A treatment works that has a combined sewer system must complete Part G (Combined Sewer Systems).

ALL APPLICANTS MUST COMPLETE PART C (CERTIFICATION)

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name Jimmy Carr Wastewater Treatment Plant

Mailing Address 9 Park Street
Headland, AL 36345

Contact person Jason Singletary

Title Director of Water and Wastewater

Telephone number (334) 693-3365

Facility Address US Highway 431
(not P.O. Box) Headland, AL 36345

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name City of Headland

Mailing Address 9 Park Street
Headland, AL 36345

Contact person Jason Singletary

Title Director of Water and Wastewater

Telephone number (334) 693-3365

Is the applicant the owner or operator (or both) of the treatment works?

owner operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

facility applicant

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES AL0027014 PSD _____

UIC _____ Other _____

RCRA _____ Other _____

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
<u>Headland, AL</u>	_____	<u>Seperate Sanitary</u>	<u>Municipal</u>
_____	_____	_____	_____
_____	_____	_____	_____
Total population served _____			

A.5. Indian Country.

a. Is the treatment works located in Indian Country?

Yes No

b. Does the treatment works discharge to a receiving water that is either in Indian Country or that is upstream from (and eventually flows through) Indian Country?

Yes No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 0.500 mgd

	<u>Two Years Ago</u>	<u>Last Year</u>	<u>This Year</u>
b. Annual average daily flow rate	<u>0.306</u>	<u>0.458</u>	<u>0.396</u> mgd
c. Maximum daily flow rate	<u>1.252</u>	<u>1.283</u>	<u>1.169</u> mgd

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

Separate sanitary sewer 100.00 %
 Combined storm and sanitary sewer _____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters of the U.S.? Yes No

If yes, list how many of each of the following types of discharge points the treatment works uses:

- i. Discharges of treated effluent 1
- ii. Discharges of untreated or partially treated effluent 0
- iii. Combined sewer overflow points 0
- iv. Constructed emergency overflows (prior to the headworks) 0
- v. Other _____

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the U.S.? Yes No

If yes, provide the following for each surface impoundment:

Location: _____

Annual average daily volume discharged to surface impoundment(s) _____ mgd

Is discharge _____ continuous or _____ intermittent?

c. Does the treatment works land-apply treated wastewater? Yes No

If yes, provide the following for each land application site:

Location: _____

Number of acres: _____

Annual average daily volume applied to site: _____ Mgd

Is land application _____ continuous or _____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? Yes No

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

If transport is by a party other than the applicant, provide:

Transporter name: _____

Mailing Address: _____

Contact person: _____

Title: _____

Telephone number: _____

For each treatment works that receives this discharge, provide the following:

Name: _____

Mailing Address: _____

Contact person: _____

Title: _____

Telephone number: _____

If known, provide the NPDES permit number of the treatment works that receives this discharge. _____

Provide the average daily flow rate from the treatment works into the receiving facility. _____ mgd

e Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? _____ Yes No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

Annual daily volume disposed of by this method: _____

Is disposal through this method _____ continuous or _____ intermittent?

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 once for each outfall (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. If you answered "no" to question A.8.a, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1 mgd."

A.9. Description of Outfall.

- a. Outfall number 001
 - b. Location Headland 36345
(City or town, if applicable) (Zip Code)
Henry AL
(County) (State)
31° 19' 28" N 85° 20' 16" W
(Latitude) (Longitude)
 - c. Distance from shore (if applicable) _____ ft.
 - d. Depth below surface (if applicable) _____ ft.
 - e. Average daily flow rate 0.39 mgd
 - f. Does this outfall have either an intermittent or a periodic discharge?
 Yes No (go to A.9.g.)
- If yes, provide the following information:
- Number of times per year discharge occurs: _____
 - Average duration of each discharge: _____
 - Average flow per discharge: _____ mgd
 - Months in which discharge occurs: _____
- g. Is outfall equipped with a diffuser? Yes No



A.10. Description of Receiving Waters.

- a. Name of receiving water White Branch
- b. Name of watershed (if known) _____
 United States Soil Conservation Service 14-digit watershed code (if known): _____
- c. Name of State Management/River Basin (if known): _____
 United States Geological Survey 8-digit hydrologic cataloging unit code (if known): _____
- d. Critical low flow of receiving stream (if applicable):
 acute _____ cfs chronic _____ cfs
- e. Total hardness of receiving stream at critical low flow (if applicable): _____ mg/l of CaCO₃

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

Primary Secondary
 Advanced Other. Describe: _____

b. Indicate the following removal rates (as applicable):

Design BOD₅ removal or Design CBOD₅ removal 85.00 %
 Design SS removal 65.00 %
 Design P removal 0.00 %
 Design N removal 0.00 %
 Other _____ %

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

If disinfection is by chlorination, is dechlorination used for this outfall? Yes No

d. Does the treatment plant have post aeration? Yes No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	7.40	s.u.			
pH (Maximum)	8.20	s.u.			
Flow Rate	1.28	MGD	0.39	MGD	1,033.00
Temperature (Winter)	20.40	°C	13.50	°C	10.00
Temperature (Summer)	25.60	°C	22.10	°C	15.00

* For pH please report a minimum and a maximum daily value

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		

CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.

BIOCHEMICAL OXYGEN DEMAND (Report one)	BOD-5	CBOD-5						
		5.79	mg/L	0.86	mg/L	26.00	SM 5210 B	2.00 mg/L
FECAL COLIFORM		1,630.70	N/100mL	207.80	N/100mL	27.00	SM 9223 B	1 N/100mL
TOTAL SUSPENDED SOLIDS (TSS)		10.60	mg/L	2.69	mg/L	26.00	SM2540 D	2.00 mg/L

**END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE**

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

_____ 10,000.00 gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

- a. The area surrounding the treatment plant, including all unit processes
- b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.
- c. Each well where wastewater from the treatment plant is injected underground.
- d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.
- e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.
- f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g., chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? Yes No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: _____

Mailing Address _____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.)

a List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

b Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies

Yes No

FACILITY NAME AND PERMIT NUMBER:

Farm Approved 1/14/99
OMB Number 2040-0086

c. If the answer to B 5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible

Implementation Stage	Schedule	Actual Completion
	MM / DD / YYYY	MM / DD / YYYY
- Begin construction	___/___/___	___/___/___
- End construction	___/___/___	___/___/___
- Begin discharge	___/___/___	___/___/___
- Attain operational level	___/___/___	___/___/___

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? Yes No

Describe briefly: _____

B.6. EFFLUENT TESTING DATA (GREATER THAN 0.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 001

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	11.50	mg/L	2.25	mg/L	28.00	SM 4500-NH3 D	0.100 mg/L
CHLORINE (TOTAL RESIDUAL, TRC)							
DISSOLVED OXYGEN	13.11	mg/L	9.61	mg/L	26.00	SM 4500-O G	0.100 mg/L
TOTAL KJELDAHL NITROGEN (TKN)	2.54	mg/L	1.13	mg/L	7.00	HACH 10242	1.00 mg/L
NITRATE PLUS NITRITE NITROGEN	3.17	mg/L	0.91	mg/L	7.00	HACH 10206	0.300 mg/L
OIL and GREASE	0.00	mg/L	0.00	mg/L	1.00	EPA 1664 A	1.52 mg/L
PHOSPHORUS (Total)	3.68	mg/L	2.64	mg/L	7.00	EPA 365.3	0.1 mg/L
TOTAL DISSOLVED SOLIDS (TDS)	110.00	mg/L	110.00	mg/L	1.00	SM2540 C	2.00 mg/L
OTHER							

**END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE**

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART C. CERTIFICATION

All applicants must complete the Certification Section. Refer to instructions to determine who is an officer for the purposes of this certification. All applicants must complete all applicable sections of Form 2A, as explained in the Application Overview. Indicate below which parts of Form 2A you have completed and are submitting. By signing this certification statement, applicants confirm that they have reviewed Form 2A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of Form 2A you have completed and are submitting:

Basic Application Information packet

Supplemental Application Information packet:

Part D (Expanded Effluent Testing Data)

Part E (Toxicity Testing: Biomonitoring Data)

Part F (Industrial User Discharges and RCRA/CERCLA Wastes)

Part G (Combined Sewer Systems)

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title Ray Marler, Mayor

Signature 

Telephone number (334) 693-3846

Date signed 2-28-19

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART D. EXPANDED EFFLUENT TESTING DATA

Refer to the directions on the cover page to determine whether this section applies to the treatment works.

Effluent Testing: 1.0 mgd and Pretreatment Treatment Works. If the treatment works has a design flow greater than or equal to 1.0 mgd or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information and any other information required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS, AND HARDNESS.											
ANTIMONY	<0.002	mg/L	<0.016	lb/d	<0.002	mg/L	<0.010	lb/d	3	200.8	0.002 mg/L
ARSENIC	<0.001	mg/L	<0.008	lb/d	<0.001	mg/L	<0.005	lb/d	3	200.8	0.001 mg/L
BERYLLIUM	<0.001	mg/L	<0.008	lb/d	<0.001	mg/L	<0.005	lb/d	3	200.8	0.001 mg/L
CADMIUM	<0.001	mg/L	<0.008	lb/d	<0.001	mg/L	<0.005	lb/d	3	200.8	0.001 mg/L
CHROMIUM	<0.001	mg/L	<0.013	lb/d	<0.001	mg/L	<0.009	lb/d	3	200.8	0.001 mg/L
COPPER	0.00209	mg/L	0.017	lb/d	0.00159	mg/L	0.013	lb/d	3	200.8	0.001 mg/L
LEAD	0.00114	mg/L	0.008	lb/d	0.00105	mg/L	0.005	lb/d	3	200.8	0.001 mg/L
MERCURY	2.92	ng/L	<0.002	lb/d	2.60	ng/L	<0.001	lb/d	3	1631E	0.5 ng/L
NICKEL	0.00111	mg/L	0.008	lb/d	0.00104	mg/L	0.005	lb/d	3	200.8	0.001 mg/L
SELENIUM	<0.002	mg/L	<0.016	lb/d	<0.002	mg/L	<0.013	lb/d	3	200.8	0.002 mg/L
SILVER	<0.001	mg/L	<0.008	lb/d	<0.001	mg/L	<0.007	lb/d	3	200.8	0.001 mg/L
THALLIUM	<0.001	mg/L	<0.008	lb/d	<0.001	mg/L	<0.005	lb/d	3	200.8	0.001 mg/L
ZINC	<0.010	mg/L	0.081	lb/d	<0.010	mg/L	0.066	lb/d	3	200.8	0.010 mg/L
CYANIDE	<0.005	mg/L	<0.040	lb/d	<0.005	mg/L	<0.024	lb/d	3	4500CN E-2011	0.005 mg/L
TOTAL PHENOLIC COMPOUNDS	<0.040	mg/L	<0.323	lb/d	<0.040	mg/L	<0.196	lb/d	3	420.4	0.040 mg/L
HARDNESS (AS CaCO ₃)	36.90	mg/L	241.943	lb/d	32.30	mg/L	149.757	lb/d	3	130.1	30.00 mg/L
Use this space (or a separate sheet) to provide information on other metals requested by the permit writer.											

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE			AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL	
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units			Number of Samples
VOLATILE ORGANIC COMPOUNDS.											
ACROLEIN	<50.0	µg/L	<0.403	lb/d	<50.0	µg/L	<0.251	lb/d	3	624.1	50.0 µg/L
ACRYLONITRILE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.050	lb/d	3	624.1	10.0 µg/L
BENZENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
BROMOFORM	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
CARBON TETRACHLORIDE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
CLOROBENZENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
CHLORODIBROMO-METHANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
CHLOROETHANE	<5.00	µg/L	<0.040	lb/d	<5.00	µg/L	<0.025	lb/d	3	624.1	5.00 µg/L
2-CHLORO-ETHYLVINYL ETHER	<50.0	µg/L	<0.403	lb/d	<50.0	µg/L	<0.251	lb/d	3	624.1	50.0 µg/L
CHLOROFORM	<5.00	µg/L	<0.040	lb/d	<5.00	µg/L	<0.025	lb/d	3	624.1	5.00 µg/L
DICHLOROBROMO-METHANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,1-DICHLOROETHANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,2-DICHLOROETHANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
TRANS-1,2-DICHLORO-ETHYLENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,1-DICHLOROETHYLENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,2-DICHLOROPROPANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,3-DICHLORO-PROPYLENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
ETHYLBENZENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
METHYL BROMIDE	<5.00	µg/L	<0.040	lb/d	<5.00	µg/L	<0.025	lb/d	3	624.1	5.00 µg/L
METHYL CHLORIDE	<2.50	µg/L	<0.020	lb/d	<2.50	µg/L	<0.015	lb/d	3	624.1	2.50 µg/L
METHYLENE CHLORIDE	<5.00	µg/L	<0.040	lb/d	<5.00	µg/L	<0.025	lb/d	3	624.1	5.00 µg/L
1,1,2,2-TETRACHLORO-ETHANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
TETRACHLORO-ETHYLENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
TOLUENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
1,1,1-TRICHLOROETHANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,1,2-TRICHLOROETHANE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
TRICHLOROETHYLENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
VINYL CHLORIDE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L

Use this space (or a separate sheet) to provide information on other volatile organic compounds requested by the permit writer.

--	--	--	--	--	--	--	--	--	--	--	--

ACID-EXTRACTABLE COMPOUNDS

P-CHLORO-M-CRESOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
2-CHLOROPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
2,4-DICHLOROPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
2,4-DIMETHYLPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
4,6-DINITRO-O-CRESOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
2,4-DINITROPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
2-NITROPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
4-NITROPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
PENTACHLOROPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
PHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
2,4,6-TRICHLOROPHENOL	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L

Use this space (or a separate sheet) to provide information on other acid-extractable compounds requested by the permit writer.

--	--	--	--	--	--	--	--	--	--	--	--

BASE-NEUTRAL COMPOUNDS.

ACENAPHTHENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
ACENAPHTHYLENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
ANTHRACENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
BENZIDINE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
BENZO(A)ANTHRACENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
BENZO(A)PYRENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
3,4 BENZO-FLUORANTHENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
BENZO(GHI)PERYLENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
BENZO(K)FLUORANTHENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
BIS (2-CHLOROETHOXY) METHANE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
BIS (2-CHLOROETHYL)-ETHER	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
BIS (2-CHLOROISO-PROPYL) ETHER	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
BIS (2-ETHYLHEXYL) PHTHALATE	<3.00	µg/L	<0.024	lb/d	<3.00	µg/L	<0.015	lb/d	3	625.1	3.00 µg/L
4-BROMOPHENYL PHENYL ETHER	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
BUTYL BENZYL PHTHALATE	<3.00	µg/L	<0.024	lb/d	<3.00	µg/L	<0.015	lb/d	3	625.1	3.00 µg/L
2-CHLORONAPHTHALENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
4-CHLORPHENYL PHENYL ETHER	<10.0	µg/L	<0.073	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
CHRYSENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
DI-N-BUTYL PHTHALATE	<3.00	µg/L	<0.024	lb/d	<3.00	µg/L	<0.015	lb/d	3	625.1	3.00 µg/L
DI-N-OCTYL PHTHALATE	<3.00	µg/L	<0.024	lb/d	<3.00	µg/L	<0.015	lb/d	3	625.1	3.00 µg/L
DIBENZO(A,H) ANTHRACENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
1,2-DICHLOROBENZENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,3-DICHLOROBENZENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
1,4-DICHLOROBENZENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	624.1	1.00 µg/L
3,3-DICHLOROBENZIDINE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
DIETHYL PHTHALATE	<3.00	µg/L	<0.024	lb/d	<3.00	µg/L	<0.015	lb/d	3	625.1	3.00 µg/L
DIMETHYL PHTHALATE	<3.00	µg/L	<0.024	lb/d	<3.00	µg/L	<0.015	lb/d	3	625.1	3.00 µg/L
2,4-DINITROTOLUENE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
2,6-DINITROTOLUENE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
1,2-DIPHENYLHYDRAZINE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L

FACILITY NAME AND PERMIT NUMBER:

Outfall number: _____ (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
FLUORANTHENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
FLUORENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
HEXACHLOROBENZENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
HEXACHLOROBUTADIENE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
HEXACHLOROCYCLO-PENTADIENE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
HEXACHLOROETHANE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
INDENO(1,2,3-CD)PYRENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
ISOPHORONE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
NAPHTHALENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
NITROBENZENE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.10	10.0 µg/L
N-NITROSODI-N-PROPYLAMINE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
N-NITROSODI- METHYLAMINE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
N-NITROSODI-PHENYLAMINE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L
PHENANTHRENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
PYRENE	<1.00	µg/L	<0.008	lb/d	<1.00	µg/L	<0.005	lb/d	3	625.1	1.00 µg/L
1,2,4-TRICHLOROBENZENE	<10.0	µg/L	<0.081	lb/d	<10.0	µg/L	<0.049	lb/d	3	625.1	10.0 µg/L

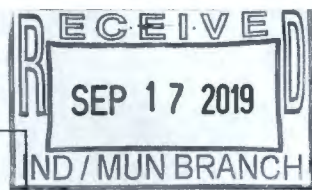
Use this space (or a separate sheet) to provide information on other base-neutral compounds requested by the permit writer.

--	--	--	--	--	--	--	--	--	--	--	--

Use this space (or a separate sheet) to provide information on other pollutants (e.g., pesticides) requested by the permit writer.

--	--	--	--	--	--	--	--	--	--	--	--

END OF PART D.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE



FACILITY NAME AND PERMIT NUMBER:
 Jimmy Carr Wastewater Treatment Plant - AL 0027014

Form Approved 1/14/99
 OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART E. TOXICITY TESTING DATA

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0 mgd; 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters.

- At a minimum, these results must include quarterly testing for a 12-month period within the past 1 year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.
- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question E.4 for previously submitted information. If EPA methods were not used, report the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years.
 ___ chronic ___ acute

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

Test number: 1 Test number: Test number:

a. Test information.

Test species & test method number	Ceriodaphnia dubiaEPA1002.0	Pimephales promelasEPA1000.	
Age at initiation of test	<24 hrs	24-36 hrs	
Outfall number	Final Effluent	Final Effluent	
Dates sample collected	05/13/2018	05/13/2018	
Date test started	05/14/2018	05/14/2018	
Duration	3-Brood	7-Day	

b. Give toxicity test methods followed.

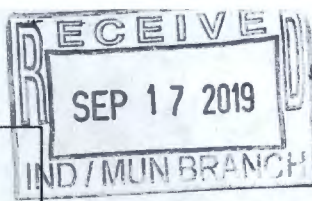
Manual title	EPA-821-R-02-013	EPA-821-R-02-013	
Edition number and year of publication	4th Edition, 2002	4th Edition, 2002	
Page number(s)			

c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.

24-Hour composite	X	X	
Grab			

d. Indicate where the sample was taken in relation to disinfection. (Check all that apply for each)

Before disinfection			
After disinfection			
After dechlorination	X	X	



FACILITY NAME AND PERMIT NUMBER:
Jimmy Carr Wastewater Treatment Plant - AL 0027014

Form Approved 1/14/99
OMB Number 2040-0086

Test number: 1.00 Test number: _____ Test number: _____

e. Describe the point in the treatment process at which the sample was collected.

Sample was collected:	Final Effluent	Final Effluent	
-----------------------	----------------	----------------	--

f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.

Chronic toxicity	X	X	
Acute toxicity			

g. Provide the type of test performed.

Static			
Static-renewal	X	X	
Flow-through			

h. Source of dilution water. If laboratory water, specify type; if receiving water, specify source.

Laboratory water	Moderately Hard SDW	Moderately Hard SDW	
Receiving water			

i. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.

Fresh water	Synthetic	Synthetic	
Salt water			

j. Give the percentage effluent used for all concentrations in the test series.

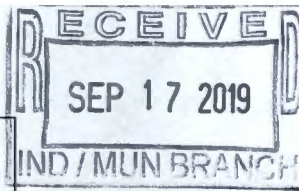
	100%	100%	

k. Parameters measured during the test. (State whether parameter meets test method specifications)

pH	7.56	7.56	
Salinity			
Temperature			
Ammonia			
Dissolved oxygen	8.2	8.2	

l. Test Results.

Acute:			
Percent survival in 100% effluent		%	%
LC ₅₀			
95% C.I.		%	%
Control percent survival		%	%
Other (describe)			



Form Approved 1/14/99
OMB Number 2040-0086

FACILITY NAME AND PERMIT NUMBER:
Jimmy Carr Wastewater Treatment Plant - AL 0027014

Chronic:

NOEC	100.00 %	100.00 %	%
IC ₂₅	%	%	%
Control percent survival	88.90 %	97.50 %	%
Other (describe)			

m. Quality Control/Quality Assurance.

Is reference toxicant data available?	Yes		
Was reference toxicant test within acceptable bounds?	Yes		
What date was reference toxicant test run (MM/DD/YYYY)?	05/02/2018		
Other (describe)			

E.3. Toxicity Reduction Evaluation. Is the treatment works involved in a Toxicity Reduction Evaluation?

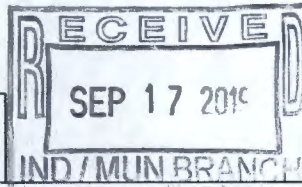
Yes No If yes, describe: EDTA (Ethylenediaminetetraacetic acid) treatment
and GAC (granulated active carbon) treatment for additional pollutant removal.

E.4. Summary of Submitted Biomonitoring Test Information. If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date submitted: _____ (MM/DD/YYYY)

Summary of results: (see instructions)

END OF PART E.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.



FACILITY NAME AND PERMIT NUMBER:

Jimmy Carr Wastewater Treatment Plant - AL 0027014

Form Approved 1/14/99
OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART E. TOXICITY TESTING DATA

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0 mgd; 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters.

- At a minimum, these results must include quarterly testing for a 12-month period within the past 1 year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.
- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question E.4 for previously submitted information. If EPA methods were not used, report the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years.

___ chronic ___ acute

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

Test number: 2 Test number: _____ Test number: _____

a. Test information.

Test species & test method number	Ceriodaphnia dubiaEPA1002.0	Pimephales promelasEPA1000.	
Age at initiation of test	<24 hrs	24-36 hrs	
Outfall number	Final Effluent	Final Effluent	
Dates sample collected	08/12/2018	08/12/2018	
Date test started	08/13/2018	08/13/2018	
Duration	3-Brood	7-Day	

b. Give toxicity test methods followed.

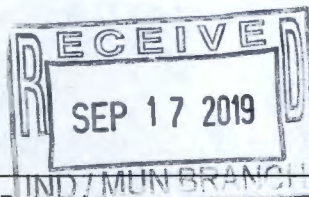
Manual title	EPA-821-R-02-013	EPA-821-R-02-013	
Edition number and year of publication	4th Edition, 2002	4th Edition, 2002	
Page number(s)			

c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.

24-Hour composite	X	X	
Grab			

d. Indicate where the sample was taken in relation to disinfection. (Check all that apply for each)

Before disinfection			
After disinfection			
After dechlorination	X	X	



Form Approved 1/14/99
OMB Number 2040-0086

FACILITY NAME AND PERMIT NUMBER:
Jimmy Carr Wastewater Treatment Plant - AL 0027014

Test number: 2.00 Test number: _____ Test number: _____

e. Describe the point in the treatment process at which the sample was collected.

Sample was collected:	Final Effluent	Final Effluent	
-----------------------	----------------	----------------	--

f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.

Chronic toxicity	X	X	
Acute toxicity			

g. Provide the type of test performed.

Static			
Static-renewal	X	X	
Flow-through			

h. Source of dilution water. If laboratory water, specify type; if receiving water, specify source.

Laboratory water	Moderately Hard SDW	Moderately Hard SDW	
Receiving water			

i. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.

Fresh water	Synthetic	Synthetic	
Salt water			

j. Give the percentage effluent used for all concentrations in the test series.

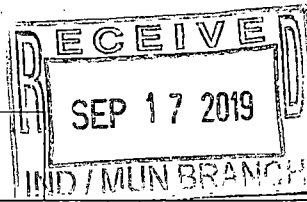
	100%	100%	

k. Parameters measured during the test. (State whether parameter meets test method specifications)

pH	6.83	6.83	
Salinity			
Temperature			
Ammonia			
Dissolved oxygen	8.9	8.9	

l. Test Results.

Acute:			
Percent survival in 100% effluent		%	%
LC ₅₀			
95% C.I.		%	%
Control percent survival		%	%
Other (describe)			



FACILITY NAME AND PERMIT NUMBER:
Jimmy Carr Wastewater Treatment Plant - AL 0027014

Form Approved 1/14/99
OMB Number 2040-0086

Chronic:

NOEC	100.00 %	100.00 %	%
IC ₂₅	%	%	%
Control percent survival	90.00 %	95.00 %	%
Other (describe)			

m. Quality Control/Quality Assurance.

Is reference toxicant data available?	Yes		
Was reference toxicant test within acceptable bounds?	Yes		
What date was reference toxicant test run (MM/DD/YYYY)?	08/02/2018		
Other (describe)			

E.3. Toxicity Reduction Evaluation. Is the treatment works involved in a Toxicity Reduction Evaluation?

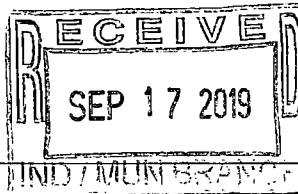
Yes No If yes, describe: EDTA (Ethylenediaminetetraacetic acid) treatment
and GAC (granulated active carbon) treatment for additional pollutant removal.

E.4. Summary of Submitted Biomonitoring Test Information. If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date submitted: _____ (MM/DD/YYYY)

Summary of results: (see instructions)

**END OF PART E.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM
2A YOU MUST COMPLETE.**



FACILITY NAME AND PERMIT NUMBER:

Jimmy Carr Wastewater Treatment Plant - AL 0027014

Form Approved 1/14/99
OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART E. TOXICITY TESTING DATA

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0 mgd; 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters.

- At a minimum, these results must include quarterly testing for a 12-month period within the past 1 year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.
- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question E-4 for previously submitted information. If EPA methods were not used, report the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years.

___ chronic ___ acute

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

Test number: 3 Test number: _____ Test number: _____

a. Test information.

Test species & test method number	Ceriodaphnia dubiaEPA1002.0	Pimephales promelasEPA1000.	
Age at initiation of test	<24 hrs	24-36 hrs	
Outfall number	Final Effluent	Final Effluent	
Dates sample collected	11/11/2018	11/11/2018	
Date test started	11/12/2018	11/12/2018	
Duration	3-Brood	7-Day	

b. Give toxicity test methods followed.

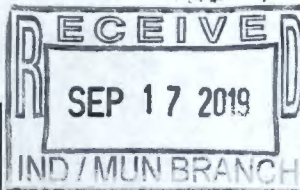
Manual title	EPA-821-R-02-013	EPA-821-R-02-013	
Edition number and year of publication	4th Edition, 2002	4th Edition, 2002	
Page number(s)			

c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.

24-Hour composite	X	X	
Grab			

d. Indicate where the sample was taken in relation to disinfection. (Check all that apply for each)

Before disinfection			
After disinfection			
After dechlorination	X	X	



FACILITY NAME AND PERMIT NUMBER:
Jimmy Carr Wastewater Treatment Plant - AL 0027014

Form Approved 1/14/99
OMB Number 2040-0086

Test number: 3.00 Test number: _____ Test number: _____

e. Describe the point in the treatment process at which the sample was collected.

Sample was collected:	Final Effluent	Final Effluent	
-----------------------	----------------	----------------	--

f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.

Chronic toxicity	X	X	
Acute toxicity			

g. Provide the type of test performed.

Static			
Static-renewal	X	X	
Flow-through			

h. Source of dilution water. If laboratory water, specify type; if receiving water, specify source.

Laboratory water	Moderately Hard SDW	Moderately Hard SDW	
Receiving water			

i. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.

Fresh water	Synthetic	Synthetic	
Salt water			

j. Give the percentage effluent used for all concentrations in the test series.

	100%	100%	

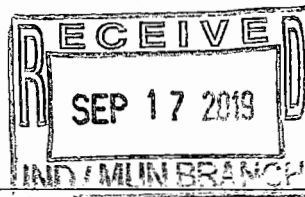
k. Parameters measured during the test. (State whether parameter meets test method specifications)

pH	7.33	7.33	
Salinity			
Temperature			
Ammonia			
Dissolved oxygen	8.9	8.9	

l. Test Results.

Acute:

Percent survival in 100% effluent	%	%	%
LC ₅₀			
95% C.I.	%	%	%
Control percent survival	%	%	%
Other (describe)			



Form Approved 1/14/99
OMB Number 2040-0086

FACILITY NAME AND PERMIT NUMBER:
Jimmy Carr Wastewater Treatment Plant - AL 0027014

Chronic:

NOEC	100.00 %	100.00 %	%
IC ₂₅	%	%	%
Control percent survival	100.00 %	97.50 %	%
Other (describe)			

m. Quality Control/Quality Assurance.

Is reference toxicant data available?	Yes		
Was reference toxicant test within acceptable bounds?	Yes		
What date was reference toxicant test run (MM/DD/YYYY)?	11/01/2018		
Other (describe)			

E.3. Toxicity Reduction Evaluation. Is the treatment works involved in a Toxicity Reduction Evaluation?

Yes No If yes, describe: EDTA (Ethylenediaminetetraacetic acid) treatment
and GAC (granulated active carbon) treatment for additional pollutant removal.

E.4. Summary of Submitted Biomonitoring Test Information. If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date submitted: _____ (MM/DD/YYYY)

Summary of results: (see instructions)

END OF PART E.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. **Pretreatment Program.** Does the treatment works have, or is it subject to, an approved pretreatment program?

Yes No

F.2. **Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs).** Provide the number of each of the following types of industrial users that discharge to the treatment works.

- a. Number of non-categorical SIUs. _____
- b. Number of CIUs. 1.00

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. **Significant Industrial User Information.** Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: Willico Inc.

Mailing Address: 127 Airport Drive
Headland, AL 36345

F.4. **Industrial Processes.** Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Metal Finishing

F.5. **Principal Product(s) and Raw Material(s).** Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Surface coating of small metal parts by powder coating

Raw material(s): _____

F.6. **Flow Rate.**

a. **Process wastewater flow rate.** Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

1,000.00 gpd (continuous or intermittent)

b. **Non-process wastewater flow rate.** Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (continuous or intermittent)

F.7. **Pretreatment Standards.** Indicate whether the SIU is subject to the following:

a. Local limits Yes No

b. Categorical pretreatment standards Yes No

If subject to categorical pretreatment standards, which category and subcategory?

Part 4.33 Metal Finishing

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g. upsets, interference) at the treatment works in the past three years?

Yes No If yes, describe each episode

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? Yes No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

Truck Rail Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

<u>EPA Hazardous Waste Number</u>	<u>Amount</u>	<u>Units</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

Yes (complete F 13 through F.15.) No

Provide a list of sites and the requested information (F. 13 - F 15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years)

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary)

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

Yes No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

Continuous Intermittent If intermittent, describe discharge schedule.

**END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM
2A YOU MUST COMPLETE**

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART G. COMBINED SEWER SYSTEMS

If the treatment works has a combined sewer system, complete Part G.

G.1. System Map. Provide a map indicating the following: (may be included with Basic Application Information)

- a. All CSO discharge points.
- b. Sensitive use areas potentially affected by CSOs (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems, and outstanding natural resource waters).
- c. Waters that support threatened and endangered species potentially affected by CSOs.

G.2. System Diagram. Provide a diagram, either in the map provided in G.1. or on a separate drawing, of the combined sewer collection system that includes the following information:

- a. Locations of major sewer trunk lines, both combined and separate sanitary.
- b. Locations of points where separate sanitary sewers feed into the combined sewer system.
- c. Locations of in-line and off-line storage structures.
- d. Locations of flow-regulating devices.
- e. Locations of pump stations.

CSO OUTFALLS:

Complete questions G.3 through G.6 once for each CSO discharge point.

G.3. Description of Outfall.

- a. Outfall number _____
- b. Location _____
(City or town, if applicable) (Zip Code)

(County) (State)

(Latitude) (Longitude)
- c. Distance from shore (if applicable) _____ ft.
- d. Depth below surface (if applicable) _____ ft.
- e. Which of the following were monitored during the last year for this CSO?
____ Rainfall ____ CSO pollutant concentrations ____ CSO frequency
____ CSO flow volume ____ Receiving water quality
- f. How many storm events were monitored during the last year? _____

G.4. CSO Events.

- a. Give the number of CSO events in the last year.
_____ events (____ actual or ____ approx.)
- b. Give the average duration per CSO event.
_____ hours (____ actual or ____ approx.)

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

- c. Give the average volume per CSO event.
_____ million gallons (____ actual or ____ approx.)
- d. Give the minimum rainfall that caused a CSO event in the last year
_____ inches of rainfall

G.5. Description of Receiving Waters.

- a. Name of receiving water: _____
- b. Name of watershed/river/stream system: _____

United States Soil Conservation Service 14-digit watershed code (if known): _____
- c. Name of State Management/River Basin: _____

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): _____

G.6. CSO Operations.

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shell fish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable State water quality standard).

**END OF PART G.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM
2A YOU MUST COMPLETE.**

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES INDIVIDUAL PERMIT APPLICATION
SUPPLEMENTARY INFORMATION FOR PUBLICLY-OWNED TREATMENT WORKS (POTW), OTHER TREATMENT
WORKS TREATING DOMESTIC SEWAGE (TWTDS), AND PUBLIC WATER SUPPLY TREATMENT PLANTS**

Instructions: This form should be used to submit the required supplementary information for an application for an NPDES individual permit for Publicly Owned Treatment Works (POTW) and other Treatment Works Treating Domestic Sewage (TWTDS). The completed application should be submitted to ADEM in duplicate. If insufficient space is available to address any item, please continue on an attached sheet of paper. Please mark "N/A" in the appropriate box when an item is not applicable to the applicant. Please type or print legibly in blue or black ink. Mail the completed application to:

ADEM-Water Division
Municipal Section
P O Box 301463
Montgomery, AL 36130-1463

PURPOSE OF THIS APPLICATION

- | | |
|--|---|
| <input type="checkbox"/> Initial Permit Application for New Facility*
<input type="checkbox"/> Modification of Existing Permit
<input type="checkbox"/> Revocation & Reissuance of Existing Permit | <input type="checkbox"/> Initial Permit Application for Existing Facility*
<input checked="" type="checkbox"/> Reissuance of Existing Permit
<small>* An application for participation in the ADEM's Electronic Environmental (E2) Reporting must be submitted to allow permittee to electronically submit reports as required.</small> |
|--|---|

SECTION A – GENERAL INFORMATION

1. Facility Name: Jimmy Carr Wastewater Treatment Plant
 a. Operator Name: City of Headland
 b. Is the operator identified in A.1.a, the owner of the facility? Yes No
 If no, provide name and address of the operator and submit information indicating the operator's scope of responsibility for the facility.

 c. Name of Permittee* if different than Operator: _____
*Permittee will be responsible for compliance with the conditions of the permit
2. NPDES Permit Number: AL 0027014 (Not applicable if initial permit application)
3. Facility Physical Location: (Attach a map with location marked; street, route no. or other specific identifier)
 Street: US Highway 431
 City: Headland County: Henry State: AL Zip: 36345
 Facility Location (Front Gate): Latitude: 31° 19' 35" N Longitude: 85° 20' 28" W
4. Facility Mailing Address: 9 Park Street
 City: Headland County: Henry State: AL Zip: 36345
5. Responsible Official (as described on last page of this application):
 Name and Title: Ray Marler, Mayor
 Address: 9 Park Street
 City: Headland State: AL Zip: 36345
 Phone Number: (334) 693-3365 Email Address: Ray.marler@agi.alabama.gov



6. Designated Facility/DMR Contact:

Name and Title: Jason Singletary, Director of Water and Wastewater

Phone Number: (334) 693-3365

Email Address: jasons@headlandalabama.org

7. Designated Emergency Contact:

Name and Title: Jason Singletary, Director of Water and Wastewater

Phone Number: (334) 693-3365

Email Address: jasons@headlandalabama.org

8. Please complete this section if the Applicant's business entity is a Proprietorship or Limited Liability Company (LLC) with a responsible official not listed in A.5.

Name and Title: _____

Address: _____

City: _____ State: _____ Zip: _____

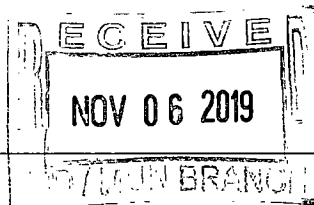
Phone Number: _____ Email Address: _____

9. Permit numbers for Applicant's previously issued NPDES Permits and identification of any other State Environmental Permits presently held by the Applicant within the State of Alabama:

<u>Permit Type</u>	<u>Permit Number</u>	<u>Held By</u>
NPDES Permit	AL0027014	City of Headland
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

10. Identify all Administrative Complaints, Notices of Violation, Directives, or Administrative Orders, Consent Decrees, or Litigation concerning water pollution or other permit violations, if any against the Applicant within the State of Alabama in the past five years (attach additional sheets if necessary):

<u>Facility Name</u>	<u>Permit Number</u>	<u>Type of Action</u>	<u>Date of Action</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



SECTION B – WASTEWATER DISCHARGE INFORMATION

1. List the following historical monthly flow rates recorded for the past five years for each outfall:

Outfall No.	Highest Flow in Last 12 Months (MGD)	Highest Daily Flow (MGD)	Average Flow (MGD)
001	1.169	1.283	0.387

2. Attach a process flow schematic of the treatment process, including the size of each unit operation and sample collection locations.

3. Do you share an outfall with another facility? Yes No (If no, continue to B.4)

For each shared outfall, provide the following:

Applicant's Outfall No.	Name of Other Permittee/Facility	NPDES Permit No.	Where is sample collected by Applicant?

4. Do you have, or plan to have, automatic sampling equipment or continuous wastewater flow metering equipment at this facility?

Current:	Flow Metering	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Sampling Equipment	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Planned:	Flow Metering	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Sampling Equipment	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

If so, please attach a schematic diagram of the sewer system indicating the present or future location of this equipment and describe the equipment below:

5. Are any wastewater collection or treatment modifications or expansions planned during the next three years that could alter wastewater volumes or characteristics (Note: Permit Modification may be required)? Yes No

Briefly describe these changes and any potential or anticipated effects on the wastewater quality and quantity: (Attach additional sheets if needed.)

SECTION C – WASTE STORAGE AND DISPOSAL INFORMATION

Describe the location of all sites used for the storage of solids or liquids that have any potential for accidental discharge to a water of the state, either directly or indirectly via storm sewer, municipal sewer, municipal wastewater treatment plants, or other collection or distribution systems that are located at or operated by the subject existing or proposed NPDES- permitted facility. Indicate the location of any potential release areas and provide a map or detailed narrative description of the areas of concern as an attachment to this application:

Description of Waste	Description of Storage Location
Facility does not waste sludge	
Screening form the Influent waste stream	At the screen building

Describe the location of any sites used for the ultimate disposal of solid or liquid waste materials or residuals (e.g. sludges) generated by any wastewater treatment system located at the facility.

Description of Waste	Quantity (lbs/day)	Disposal Method*
Screenings	50 lb/day	Landfill

*Indicate any wastes disposed at an off-site treatment facility and any wastes that are disposed on-site

SECTION D – INDUSTRIAL INDIRECT DISCHARGE CONTRIBUTORS

a. List the existing and proposed industrial source wastewater contributions to the municipal wastewater treatment system (Attach other sheets if necessary)

Company Name	Description of Industrial Wastewater	Existing or Proposed	Flow (MGD)	Subject to SID Permit?	
Willico	Metal Finishing	Existing	0.001	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
				<input type="checkbox"/> Yes	<input type="checkbox"/> No
				<input type="checkbox"/> Yes	<input type="checkbox"/> No
				<input type="checkbox"/> Yes	<input type="checkbox"/> No

b. Are industrial wastewater contributions regulated via a locally approved sewer use ordinance? Yes No
 If yes, please attach a copy of the ordinance.

SECTION E – COASTAL ZONE INFORMATION

Is the discharge(s) located within the 10-foot elevation contour and within the limits of Mobile or Baldwin County? Yes No
 If yes, complete items E.1 – E.12 below:

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Does the project require new construction? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Will the project be a source of new air emissions? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Does the project involve dredging and/or filling of a wetland area or water way? | <input type="checkbox"/> | <input type="checkbox"/> |
| If Yes, has the Corps of Engineers (COE) permit been received? | <input type="checkbox"/> | <input type="checkbox"/> |
| COE Project No. _____ | | |
| 4. Does the project involve wetlands and/or submersed grassbeds? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Are oyster reefs located near the project site? | <input type="checkbox"/> | <input type="checkbox"/> |
| If Yes, include a map showing project and discharge location with respect to oyster reefs | | |
| 6. Does the project involve the site development, construction and operation of an energy facility as defined in ADEM Admin. Code r. 335-8-1-.02(bb)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Does the project involve mitigation of shoreline or coastal area erosion? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Does the project involve construction on beaches or dune areas? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Will the project interfere with public access to coastal waters? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Does the project lie within the 100-year floodplain? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Does the project involve the registration, sale, use, or application of pesticides? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Does the project propose or require construction of a new well or to alter an existing groundwater well to pump more than 50 gallons per day (GPD)? | <input type="checkbox"/> | <input type="checkbox"/> |
| If yes, has the applicable permit for groundwater recovery or for groundwater well installation been obtained? | <input type="checkbox"/> | <input type="checkbox"/> |

SECTION F – ANTI-DEGRADATION EVALUATION

In accordance with 40 CFR §131.12 and the ADEM Admin. Code r. 335-6-10-.04 for anti-degradation, the following information must be provided, if applicable. It is the applicant's responsibility to demonstrate the social and economic importance of the proposed activity. If further information is required to make this demonstration, attach additional sheets to the application.

1. Is this a new or increased discharge that began after April 3, 1991? Yes No
If yes, complete F.2 below. If no, go to Section G.

2. Has an Anti-Degradation Analysis been previously conducted and submitted to the Department for the new or increased discharge referenced in F.1? Yes No

If yes, do not complete this section.

If no and the discharge is to a Tier II waterbody as defined in ADEM Admin. Code r. 335-6-10-12(4), complete F.2.A – F.2.F below, ADEM Form 311-Alternatives Analysis, and either ADEM Form 312 or ADEM Form 313- Calculation of Total Annualized Project Costs (Public-Sector or Private-Sector Projects, whichever is applicable). ADEM Form 312 or ADEM Form 313, whichever is applicable, must be provided for **each** treatment discharge alternative considered technically viable. ADEM forms can be found on the Department's website at <http://adem.alabama.gov/DeptForms/>.

Information required for new or increased discharges to high quality waters:

- A. What environmental or public health problem will the discharger be correcting?

- B. How much will the discharger be increasing employment (at its existing facility or as the result of locating a new facility)?

- C. How much reduction in employment will the discharger be avoiding?

- D. How much additional state or local taxes will the discharger be paying?

- E. What public service to the community will the discharger be providing?

- F. What economic or social benefit will the discharger be providing to the community?

SECTION G – EPA Application Forms

All Applicants must submit certain EPA permit application forms. More than one application form may be required from a POTW or other TWTDS depending on the number and types of discharges or outfalls. The EPA application forms are found on the Department's website at <http://adem.alabama.gov/programs/water/waterforms.cnt>. The EPA application forms must be submitted in duplicate as follows:

1. All applicants must submit Form 1.
2. Applicants for new or existing discharges of sanitary wastewater from Publicly-Owned Treatment Works (POTW) and Other Treatment Works Treating Domestic Sewage (TWTDS) must submit Form 2A.
3. Applicants for new or existing land application of sanitary wastewater must submit Form 2A and, if the land application site is not completely bermed to prevent runoff, applicants must also submit Form 2F.
4. Applicants for new and existing discharges of process wastewater from water treatment facilities (i.e. public water supply treatment plants) must submit Form 2C.
5. Applicants that generate sewage sludge, derive a material from sewage sludge, or dispose of sewage sludge must submit Part 2 of Form 2S.

SECTION H- ENGINEERING REPORT/BMP PLAN REQUIREMENTS

Any Engineering Report or Best Management Practice (BMP) Plans required to be submitted to ADEM by the applicant must be in accordance with ADEM 335-6-6- 08(i) & (j).

SECTION I- RECEIVING WATERS

Outfall No.	Receiving Water(s)	303(d) Segment?		Included in TMDL?*	
001	White Branch	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No

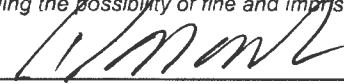
*If a TMDL Compliance Schedule is requested, the following should be attached as supporting documentation:

- (1) Justification for the requested Compliance Schedule (e.g. time for design and installation of control equipment, etc.);
- (2) Monitoring results for the pollutant(s) of concern which have not previously been submitted to the Department (sample collection dates, analytical results (mass and concentration), methods utilized, MDL/ML, etc. should be submitted as available);
- (3) Requested interim limitations, if applicable;
- (4) Date of final compliance with the TMDL limitations; and,
- (5) Any other additional information available to support requested compliance schedule.

SECTION J - APPLICATION CERTIFICATION

The information contained in this form must be certified by a responsible official as defined in ADEM Administrative Code r. 335-6-6-.09 "signatories to permit applications and reports" (see below).

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

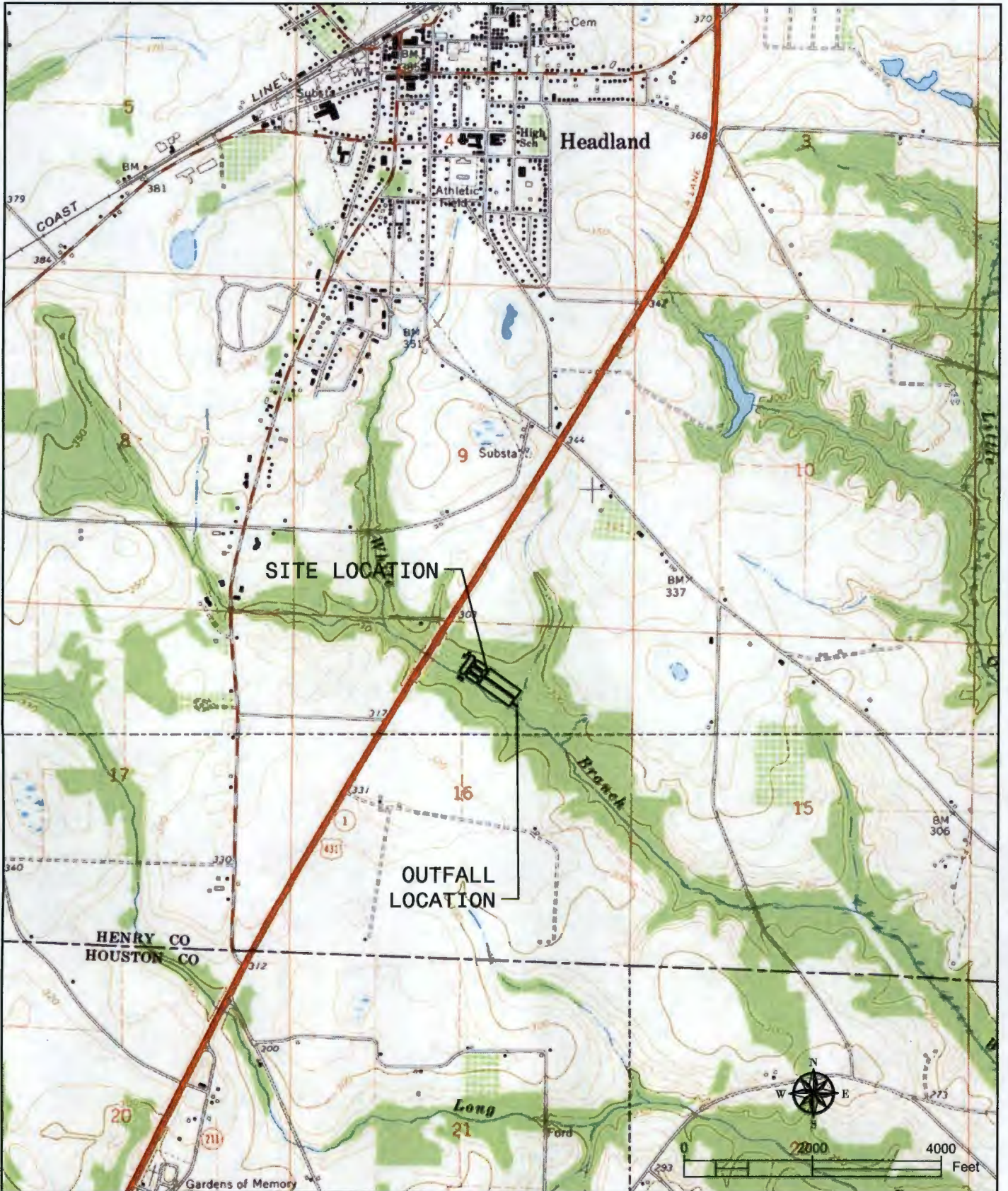
Signature of Responsible Official:  Date Signed: 2-28-19
 Name and Title: Ray Marler, Mayor

If the Responsible Official signing this application is not identified in Section A.5 or A.8, provide the following information:

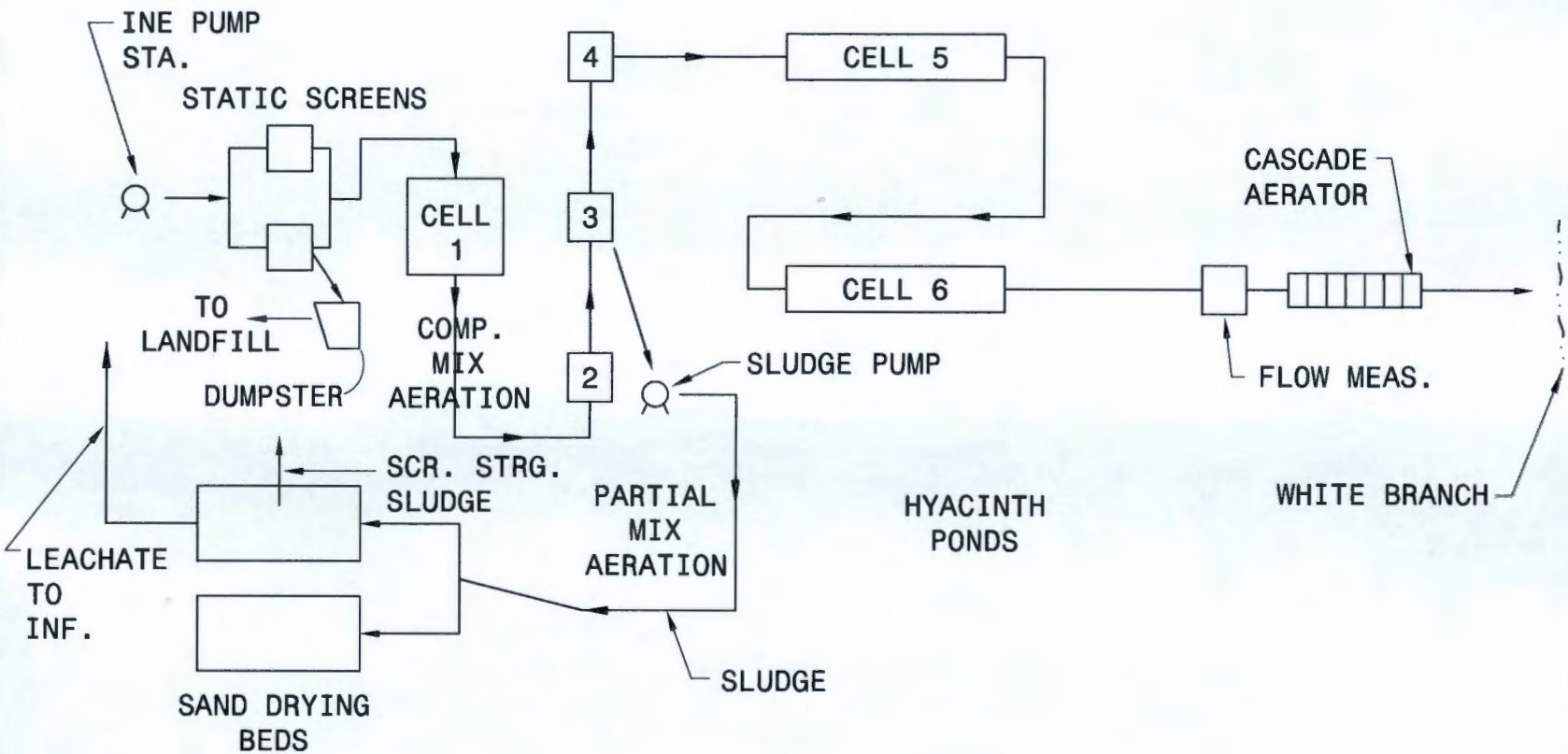
Mailing Address: 9 Park Street
 City: Headland State: AL Zip: 36345
 Phone Number: (334) 693-3365 Email Address: _____

335-6-6-.09 SIGNATORIES TO PERMIT APPLICATIONS AND REPORTS.

- (1) The application for an NPDES permit shall be signed by a responsible official, as indicated below:
 - (a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;
 - (b) In the case of a partnership, by a general partner;
 - (c) In the case of a sole proprietorship, by the proprietor; or
 - (d) In the case of a municipal, state, federal, or other public entity, by either a principal executive officer, or ranking elected official.



SHEET No. <h1 style="font-size: 2em; margin: 0;">1</h1>	HEADLAND NPDES PERMIT RENEWAL SITE VICINITY MAP JIMMY CARR WWTP HEADLAND, ALABAMA	POLY, INC. 1936 Headland Avenue Dothan, AL 36303 334-793-4700 <small>102 Sunset Lane 2195 University Blvd, Ste. A Shalimar, FL 32579 Tuscaloosa, AL 35401 850-809-1100 205-752-4037</small> WWW.POLY-INC.COM	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: 0.8em;">DESIGNED BY: LB</td> <td style="font-size: 0.8em;">DRAWN BY: DH</td> <td style="font-size: 0.8em;">DATE: AUGUST 2019</td> </tr> <tr> <td colspan="2" style="font-size: 0.8em;">ENG / ARCH / SURVEYOR OF RECORD:</td> <td style="font-size: 0.8em;">REGISTRATION No.</td> </tr> <tr> <td colspan="3" style="font-size: 0.7em;"> Cert. of Auth. No. No. PL. GA. ARCHITECT CA-0480 AA-C201191 001118 ENGINEER CA-75-E CA-1913 001118 SURVEY CA-018125 187827 13F00132 </td> </tr> </table> <p style="font-size: 0.7em;">These drawings are copyrighted and the property of Poly-Inc. Any use, partial or full reproduction is prohibited except by written Agreement with Poly-Inc.</p>	DESIGNED BY: LB	DRAWN BY: DH	DATE: AUGUST 2019	ENG / ARCH / SURVEYOR OF RECORD:		REGISTRATION No.	Cert. of Auth. No. No. PL. GA. ARCHITECT CA-0480 AA-C201191 001118 ENGINEER CA-75-E CA-1913 001118 SURVEY CA-018125 187827 13F00132			
DESIGNED BY: LB	DRAWN BY: DH	DATE: AUGUST 2019											
ENG / ARCH / SURVEYOR OF RECORD:		REGISTRATION No.											
Cert. of Auth. No. No. PL. GA. ARCHITECT CA-0480 AA-C201191 001118 ENGINEER CA-75-E CA-1913 001118 SURVEY CA-018125 187827 13F00132													
PROJECT No. 74-071													



SHEET No. **2**
 PROJECT No. 74-071

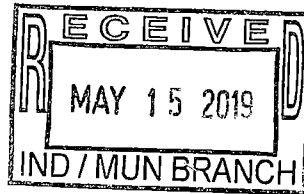
HEADLAND NPDES PERMIT RENEWAL
 WWTP SCHEMATIC
 JIMMY CARR WWTP
 HEADLAND, ALABAMA

POLY, INC.
 1035 Headland Avenue
 Dothan, AL 36003
 334-793-4700
 132 Summit Lane 2135 University Blvd, Ste. A
 Suwanee, FL 32078 Talladega, AL 36897
 800-696-1100 205-752-4837
 WWW.POLY.INC.COM

DESIGNED BY:	LB	DATE:	FEBRUARY 27 2019
ENGR / ARCH / SURVEYOR OF RECORD:	MA	REGISTRATION NO.:	
CHIEF OF ADMIN.:			
PROJECT (OWNER):	ADDITIONAL		
DATE:	01-18		
REVISION:	01-18		
DATE:	01-18		
REVISION:	01-18		

These drawings are the property of Poly, Inc. and shall remain the property of Poly, Inc. Any use, partial or full reproduction is without permission from Poly, Inc.





Form Approved 1/14/99
OMB Number 2040-0086

FACILITY NAME AND PERMIT NUMBER:

PART 1: LIMITED BACKGROUND INFORMATION

This part should be completed only by "sludge-only" facilities - that is, facilities that do not currently have, and are not applying for, an NPDES permit for a direct discharge to a surface body of water.

For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

1. Facility Information.

- a. Facility name Jimmy Carr Wastewater Treatment Plant
- b. Mailing Address 9 Park Street, Headland, AL 36345
- c. Contact person Jason Singletary
Title Director of Water and Wastewater
Telephone number (334) 693-3365
- d. Facility Address (not P.O. Box) US Highway 431
Headland, AL 36345
- e. Indicate the type of facility
 Publicly owned treatment works (POTW) Privately owned treatment works
 Federally owned treatment works Blending or treatment operation
 Surface disposal site Sewage sludge incinerator
 Other (describe) _____

2. Applicant Information.

- a. Applicant name City of Headland
- b. Mailing Address 9 Park Street, Headland, AL 36345
- c. Contact person Jason Singletary
Title Director of Water and Wastewater
Telephone number (334) 693-3365
- d. Is the applicant the owner or operator (or both) of this facility?
 owner operator
- e. Should correspondence regarding this permit be directed to the facility or the applicant?
 facility applicant

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

3. Sewage Sludge Amount. Provide the total dry metric tons per latest 365 day period of sewage sludge handled under the following practices:

- a. Amount generated at the facility 0.00 dry metric tons
- b. Amount received from off site 0.00 dry metric tons
- c. Amount treated or blended on site 0.00 dry metric tons
- d. Amount sold or given away in a bag or other container for application to the land 0.00 dry metric tons
- e. Amount of bulk sewage sludge shipped off site for treatment or blending 0.00 dry metric tons
- f. Amount applied to the land in bulk form 0.00 dry metric tons
- g. Amount placed on a surface disposal site 0.00 dry metric tons
- h. Amount fired in a sewage sludge incinerator 0.00 dry metric tons
- i. Amount sent to a municipal solid waste landfill 0.00 dry metric tons
- j. Amount used or disposed by another practice 0.00 dry metric tons

Describe Facility does not waste sludge

4. Pollutant Concentrations. Using the table below or a separate attachment, provide existing sewage sludge monitoring data for the pollutants for which limits in sewage sludge have been established in 40 CFR part 503 for this facility's expected use or disposal practices. If available, base data on three or more samples taken at least one month apart and no more than four and one-half years old.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
ARSENIC			
CADMIUM			
CHROMIUM			
COPPER			
LEAD			
MERCURY			
MOLYBDENUM			
NICKEL			
SELENIUM			
ZINC			

5. Treatment Provided At Your Facility.

a. Which class of pathogen reduction does the sewage sludge meet at your facility?

 Class A Class B Neither or unknown

b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge:

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

c. Which vector attraction reduction option is met for the sewage sludge at your facility?

- Option 1 (Minimum 38 percent reduction in volatile solids)
- Option 2 (Anaerobic process, with bench-scale demonstration)
- Option 3 (Aerobic process, with bench-scale demonstration)
- Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
- Option 5 (Aerobic processes plus raised temperature)
- Option 6 (Raise pH to 12 and retain at 11.5)
- Option 7 (75 percent solids with no unstabilized solids)
- Option 8 (90 percent solids with unstabilized solids)
- Option 9 (Injection below land surface)
- Option 10 (Incorporation into soil within 6 hours)
- Option 11 (Covering active sewage sludge unit daily)
- None or unknown

d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge:

6. **Sewage Sludge Sent to Other Facilities.** Does the sewage sludge from your facility meet the Table 1 ceiling concentrations, the Table 3 pollutant concentrations, Class A pathogen requirements, and one of the vector attraction options 1-8?
 Yes No

If yes, go to question 8 (Certification).

If no, is sewage sludge from your facility provided to another facility for treatment, distribution, use, or disposal?
 Yes No

If no, go to question 7 (Use and Disposal Sites).

If yes, provide the following information for the facility receiving the sewage sludge:

- a. Facility name
- b. Mailing address
- c. Contact person
Title
Telephone number

d. Which activities does the receiving facility provide? (Check all that apply)

- Treatment or blending
- Land application
- Incineration
- Sale or give-away in bag or other container
- Surface disposal
- Other (describe):

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/89
OMB Number 2040-0086

7. Use and Disposal Sites. Provide the following information for each site on which sewage sludge from this facility is used or disposed:

a. Site name or number _____

b. Contact person _____

Title _____

Telephone _____

c. Site location (Complete 1 or 2)

1. Street or Route # _____

County _____

City or Town _____ State _____ Zip _____

2. Latitude _____ Longitude _____

d. Site type (Check all that apply)

Agricultural

Lawn or home garden

Forest

Surface disposal

Public Contact

Incineration

Reclamation

Municipal Solid Waste Landfill

Other (describe): _____

8. Certification. Sign the certification statement below. (Refer to instructions to determine who is an officer for purposes of this certification.)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title Ray Marler, Mayor

Signature *Ray Marler*

Telephone number (334) 693-3846

Date signed 5-31-19

SEND COMPLETED FORMS TO:



FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

PART 2: PERMIT APPLICATION INFORMATION

Complete this part if you have an effective NPDES permit or have been directed by the permitting authority to submit a full permit application at this time. In other words, complete this part if your facility has, or is applying for, an NPDES permit.

For purposes of this form, the term "you" refers to the applicant. "This facility" and "your facility" refer to the facility for which application information is submitted.

APPLICATION OVERVIEW — SEWAGE SLUDGE USE OR DISPOSAL INFORMATION

Part 2 is divided into five sections (A-E). Section A pertains to all applicants. The applicability of Sections B, C, D, and E depends on your facility's sewage sludge use or disposal practices. The information provided on this page indicates which sections of Part 2 to fill out.

1. SECTION A: GENERAL INFORMATION.

Section A must be completed by all applicants

2. SECTION B: GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE.

Section B must be completed by applicants who either:

- 1) Generate sewage sludge, or
- 2) Derive a material from sewage sludge.

3. SECTION C: LAND APPLICATION OF BULK SEWAGE SLUDGE.

Section C must be completed by applicants who either:

- 1) Apply sewage to the land, or
- 2) Generate sewage sludge which is applied to the land by others.

NOTE: Applicants who meet either or both of the two above criteria are exempted from this requirement if all sewage sludge from their facility falls into one of the following three categories:

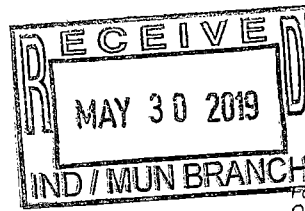
- 1) The sewage sludge from this facility meets the ceiling and pollutant concentrations, Class A pathogen reduction requirements, and one of vector attraction reduction options 1-8, as identified in the instructions, or
- 2) The sewage sludge from this facility is placed in a bag or other container for sale or give-away for application to the land, or
- 3) The sewage sludge from this facility is sent to another facility for treatment or blending.

4. SECTION D: SURFACE DISPOSAL

Section D must be completed by applicants who own or operate a surface disposal site.

5. SECTION E: INCINERATION

Section E must be completed by applicants who own or operate a sewage sludge incinerator.



Form Approved 1/14/89
OMB Number 2040-0086

FACILITY NAME AND PERMIT NUMBER:

A. GENERAL INFORMATION

All applicants must complete this section.

A.1. Facility Information.

- a. Facility name Jimmy Carr Wastewater Treatment Plant
- b. Mailing Address 9 Park Street
Headland, Alabama 36345
- c. Contact person Jason Singletary
Title Director of Water and Wastewater
Telephone number (334) 693-3365
- d. Facility Address (not P.O. Box) US 431
Headland, Alabama 36345
- e. Is this facility a Class I sludge management facility? Yes No
- f. Facility design flow rate: 0.50 mgd
- g. Total population served: _____
- h. Indicate the type of facility:
 Publicly owned treatment works (POTW) Privately owned treatment works
 Federally owned treatment works Blending or treatment operation
 Surface disposal site Sewage sludge incinerator
 Other (describe) _____

A.2. Applicant Information. If the applicant is different from the above, provide the following:

- a. Applicant name _____
- b. Mailing Address _____

- c. Contact person _____
Title _____
Telephone number _____
- d. Is the applicant the owner or operator (or both) of this facility?
 owner operator
- e. Should correspondence regarding this permit should be directed to the facility or the applicant.
 facility applicant

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

A.3. Permit Information.

- a. Facility's NPDES permit number (if applicable): AL002014
- b. List, on this form or an attachment, all other Federal, State, and local permits or construction approvals received or applied for that regulate this facility's sewage sludge management practices:

Permit Number	Type of Permit
_____	_____
_____	_____
_____	_____

A.4. Indian Country. Does any generation, treatment, storage, application to land, or disposal of sewage sludge from this facility occur in Indian Country?

_____ Yes No If yes, describe: _____

A.5. Topographic Map. Provide a topographic map or maps (or other appropriate map(s) if a topographic map is unavailable) that show the following information. Map(s) should include the area one mile beyond all property boundaries of the facility:

- a. Location of all sewage sludge management facilities, including locations where sewage sludge is stored, treated, or disposed.
- b. Location of all wells, springs, and other surface water bodies, listed in public records or otherwise known to the applicant within 1/4 mile of the facility property boundaries.

A.6. Line Drawing. Provide a line drawing and/or a narrative description that identifies all sewage sludge processes that will be employed during the term of the permit, including all processes used for collecting, dewatering, storing, or treating sewage sludge, the destination(s) of all liquids and solids leaving each unit, and all methods used for pathogen reduction and vector attraction reduction.

A.7. Contractor Information.

Are any operational or maintenance aspects of this facility related to sewage sludge generation, treatment, use or disposal the responsibility of a contractor? _____ Yes No

If yes, provide the following for each contractor (attach additional pages if necessary):

- a. Name _____
- b. Mailing Address _____
- c. Telephone Number _____
- d. Responsibilities of contractor _____

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0066

A.8. Pollution Concentrations: Using the table below or a separate attachment, provide sewage sludge monitoring data for the pollutants for which limits in sewage sludge have been established in 40 CFR Part 503 for this facility's expected use or disposal practices. All data must be based on three or more samples taken at least one month apart and must be no more than four and one-half years old.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
ARSENIC			
CADMIUM			
CHROMIUM			
COPPER			
LEAD			
MERCURY			
MOLYBDENUM			
NICKEL			
SELENIUM			
ZINC			

A.9. Certification. Read and submit the following certification statement with this application. Refer to the instructions to determine who is an officer for purposes of this certification. Indicate which parts of Form 2S you have completed and are submitting:

Part 1 Limited Background Information packet

Part 2 Permit Application Information packet:

- Section A (General Information)
- Section B (Generation of Sewage Sludge or Preparation of a Material Derived from Sewage Sludge)
- Section C (Land Application of Bulk Sewage Sludge)
- Section D (Surface Disposal)
- Section E (Incineration)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title Ray Marler, Mayor

Signature _____ Date signed _____

Telephone number (334) 693-3846

Upon request of the permitting authority, you must submit any other information necessary to assess sewage sludge use or disposal practices at your facility or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

B. GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE

Complete this section if your facility generates sewage sludge or derives a material from sewage sludge.

B.1. Amount Generated On Site.

Total dry metric tons per 365-day period generated at your facility: 131.00 dry metric tons

B.2. Amount Received from Off Site. If your facility receives sewage sludge from another facility for treatment, use, or disposal, provide the following information for each facility from which sewage sludge is received. If you receive sewage sludge from more than one facility, attach additional pages as necessary.

- a. Facility name N/A
- b. Mailing Address _____
- c. Contact person _____
Title _____
Telephone number _____
- d. Facility Address (not P.O. Box) _____
- e. Total dry metric tons per 365-day period received from this facility: _____ dry metric tons

f. Describe, on this form or on another sheet of paper, any treatment processes known to occur at the off-site facility, including blending activities and treatment to reduce pathogens or vector attraction characteristics.

B.3. Treatment Provided At Your Facility.

- a. Which class of pathogen reduction is achieved for the sewage sludge at your facility?
 Class A Class B Neither or unknown
- b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge:

- c. Which vector attraction reduction option is met for the sewage sludge at your facility?
 Option 1 (Minimum 38 percent reduction in volatile solids)
 Option 2 (Anaerobic process, with bench-scale demonstration)
 Option 3 (Aerobic process, with bench-scale demonstration)
 Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
 Option 5 (Aerobic processes plus raised temperature)
 Option 6 (Raise pH to 12 and retain at 11.5)
 Option 7 (75 percent solids with no unstabilized solids)
 Option 8 (90 percent solids with unstabilized solids)
 None or unknown

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

B.3. Treatment Provided At Your Facility. (con't)

- d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge:

- e. Describe, on this form or another sheet of paper, any other sewage sludge treatment or blending activities not identified in (a) - (d) above:
This facility does not waste sludge

Complete Section B.4 if sewage sludge from your facility meets the ceiling concentrations in Table 1 of 40 CFR 503.13, the pollutant concentrations in Table 3 of §503.13, the Class A pathogen reduction requirements in §503.32(a), and one of the vector attraction reduction requirements in § 503.33(b)(1)-(8) and is land applied. Skip this section if sewage sludge from your facility does not meet all of these criteria.

B.4. Preparation of Sewage Sludge Meeting Ceiling and Pollutant Concentrations, Class A Pathogen Requirements, and One of Vector Attraction Reduction Options 1-8.

- a. Total dry metric tons per 365-day period of sewage sludge subject to this section that is applied to the land: 0.00 dry metric tons

- b. Is sewage sludge subject to this section placed in bags or other containers for sale or give-away for application to the land?

Yes No

Complete Section B.5. if you place sewage sludge in a bag or other container for sale or give-away for land application. Skip this section if the sewage sludge is covered in Section B.4.

B.5. Sale or Give-Away in a Bag or Other Container for Application to the Land.

- a. Total dry metric tons per 365-day period of sewage sludge placed in a bag or other container at your facility for sale or give-away for application to the land: 0.00 dry metric tons

- b. Attach, with this application, a copy of all labels or notices that accompany the sewage sludge being sold or given away in a bag or other container for application to the land.

Complete Section B.6 if sewage sludge from your facility is provided to another facility that provides treatment or blending. This section does not apply to sewage sludge sent directly to a land application or surface disposal site. Skip this section if the sewage sludge is covered in Sections B.4 or B.5. If you provide sewage sludge to more than one facility, attach additional pages as necessary.

B.6. Shipment Off Site for Treatment or Blending.

- a. Receiving facility name N/A

- b. Mailing address _____

- c. Contact person _____

Title _____

Telephone number _____

- d. Total dry metric tons per 365-day period of sewage sludge provided to receiving facility: _____

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/89
OMB Number 2040-0086

B.6. Shipment Off Site for Treatment or Blending. (con't)

- e. Does the receiving facility provide additional treatment to reduce pathogens in sewage sludge from your facility? ___ Yes ___ No

Which class of pathogen reduction is achieved for the sewage sludge at the receiving facility?

___ Class A ___ Class B ___ Neither or unknown

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce pathogens in sewage sludge:

- f. Does the receiving facility provide additional treatment to reduce vector attraction characteristics of the sewage sludge?

___ Yes ___ No

Which vector attraction reduction option is met for the sewage sludge at the receiving facility?

- ___ Option 1 (Minimum 38 percent reduction in volatile solids)
___ Option 2 (Anaerobic process, with bench-scale demonstration)
___ Option 3 (Aerobic process, with bench-scale demonstration)
___ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
___ Option 5 (Aerobic processes plus raised temperature)
___ Option 6 (Raise pH to 12 and retain at 11.5)
___ Option 7 (75 percent solids with no unstabilized solids)
___ Option 8 (90 percent solids with unstabilized solids)
___ None

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge.

- g. Does the receiving facility provide any additional treatment or blending activities not identified in (c) or (d) above? ___ Yes ___ No

If yes, describe, on this form or another sheet of paper, the treatment or blending activities not identified in (c) or (d) above:

- h. If you answered yes to (e), (f), or (g), attach a copy of any information you provide the receiving facility to comply with the "notice and necessary information" requirement of 40 CFR 503.12(g).

- i. Does the receiving facility place sewage sludge from your facility in a bag or other container for sale or give-away for application to the land? ___ Yes ___ No

If yes, provide a copy of all labels or notices that accompany the product being sold or given away.

Complete Section B.7 if sewage sludge from your facility is applied to the land, unless the sewage sludge is covered in:

- Section B.4 (it meets Table 1 ceiling concentrations, Table 3 pollutant concentrations, Class A pathogen requirements, and one of vector attraction reduction options 1-8); or
- Section B.5 (you place it in a bag or other container for sale or give-away for application to the land); or
- Section B.6 (you send it to another facility for treatment or blending).

B.7. Land Application of Bulk Sewage Sludge.

- a. Total dry metric tons per 365-day period of sewage sludge applied to all land application sites: _____ dry metric tons

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

B.7. Land Application of Bulk Sewage Sludge. (con't)

- b. Do you identify all land application sites in Section C of this application? Yes No

If no, submit a copy of the land application plan with application (see instructions):

- c. Are any land application sites located in States other than the State where you generate sewage sludge or derive a material from sewage sludge? Yes No

If yes, describe, on this form or another sheet of paper, how you notify the permitting authority for the States where the land application sites are located. Provide a copy of the notification.

Complete Section B.8 if sewage sludge from your facility is placed on a surface disposal site.

B.8. Surface Disposal.

- a. Total dry metric tons of sewage sludge from your facility placed on all surface disposal sites per 365-day period: 0.00 dry metric tons

- b. Do you own or operate all surface disposal sites to which you send sewage sludge for disposal?

Yes No

If no, answer B.8.c through B.8.f for each surface disposal site that you do not own or operate. If you send sewage sludge to more than one such surface disposal site, attach additional pages as necessary.

- c. Site name or number _____

- d. Contact person _____

Title _____

Telephone number _____

Contact is Site owner Site operator

- e. Mailing address _____

- f. Total dry metric tons of sewage sludge from your facility placed on this surface disposal site per 365-day period: _____ dry metric tons

Complete Section B.9 if sewage sludge from your facility is fired in a sewage sludge incinerator.

B.9. Incineration.

- a. Total dry metric tons of sewage sludge from your facility fired in all sewage sludge incinerators per 365-day period: 0.00 dry metric tons

- b. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired? Yes No

If no, complete B.9.c through B.9.f for each sewage sludge incinerator that you do not own or operate. If you send sewage sludge to more than one such sewage sludge incinerator, attach additional pages as necessary.

- c. Incinerator name or number: _____

- d. Contact person: _____

Title: _____

Telephone number: _____

Contact is: Incinerator owner Incinerator operator

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

B.9. Incineration. (con't)

e. Mailing address: _____

f. Total dry metric tons of sewage sludge from your facility fired in this sewage sludge incinerator per 365-day period: _____ dry metric tons

Complete Section B.10 if sewage sludge from this facility is placed on a municipal solid waste landfill.

B.10. Disposal in a Municipal Solid Waste Landfill. Provide the following information for each municipal solid waste landfill on which sewage sludge from your facility is placed. If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.

a. Name of landfill N/A _____

b. Contact person _____

Title _____

Telephone number _____

Contact is _____ Landfill owner _____ Landfill operator

c. Mailing address _____

d. Location of municipal solid waste landfill:

Street or Route # _____

County _____

City or Town _____ State _____ Zip _____

e. Total dry metric tons of sewage sludge from your facility placed in this municipal solid waste landfill per 365-day period:

_____ dry metric tons

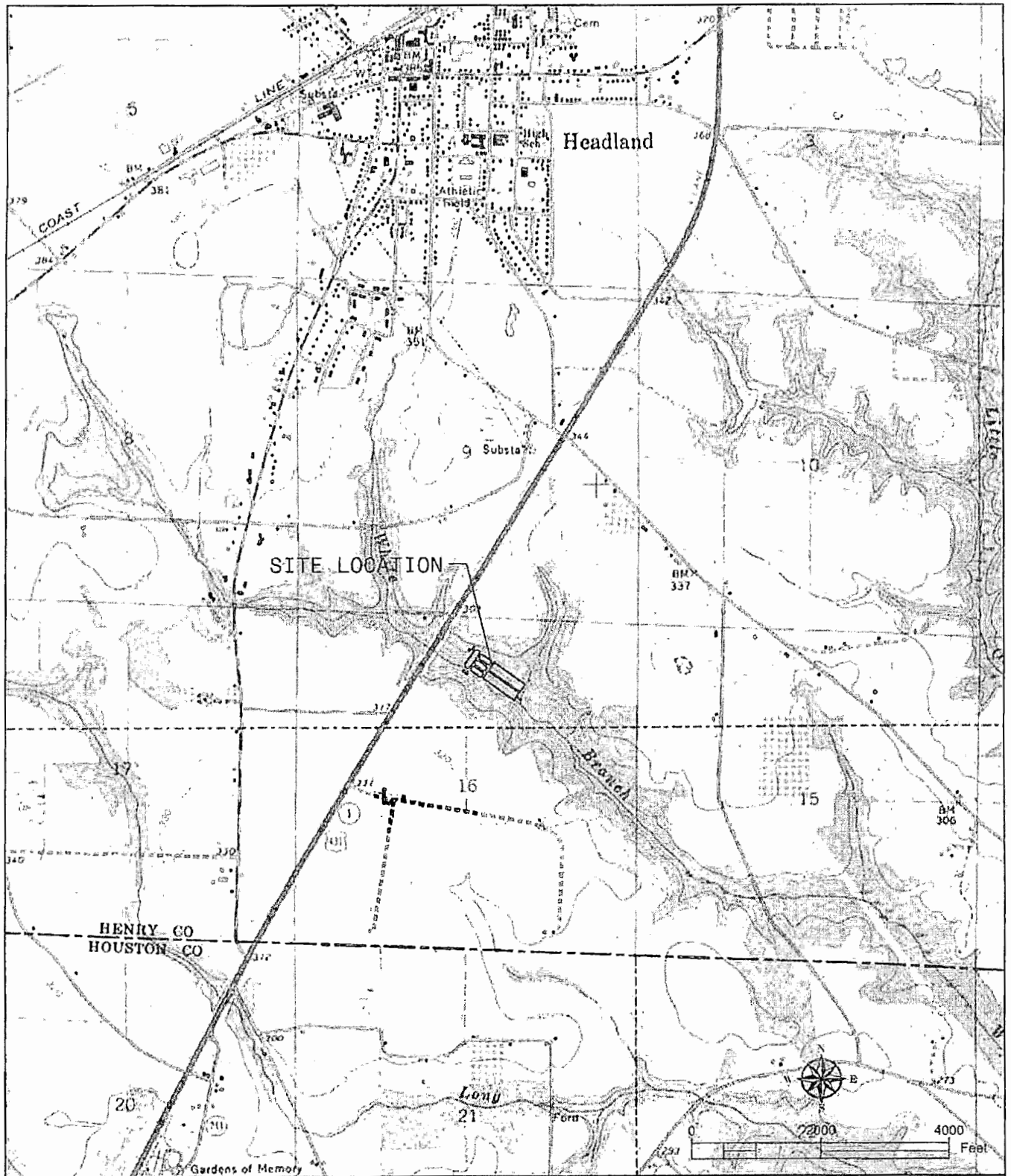
f. List, on this form or an attachment, the numbers of all other Federal, State, and local permits that regulate the operation of this municipal solid waste landfill.


Permit Number	Type of Permit
_____	_____
_____	_____
_____	_____

g. Submit, with this application, information to determine whether the sewage sludge meets applicable requirements for disposal of sewage sludge in a municipal solid waste landfill (e.g., results of paint filter liquids test and TCLP test)

h. Does the municipal solid waste landfill comply with applicable criteria set forth in 40 CFR Part 258?

_____ Yes _____ No



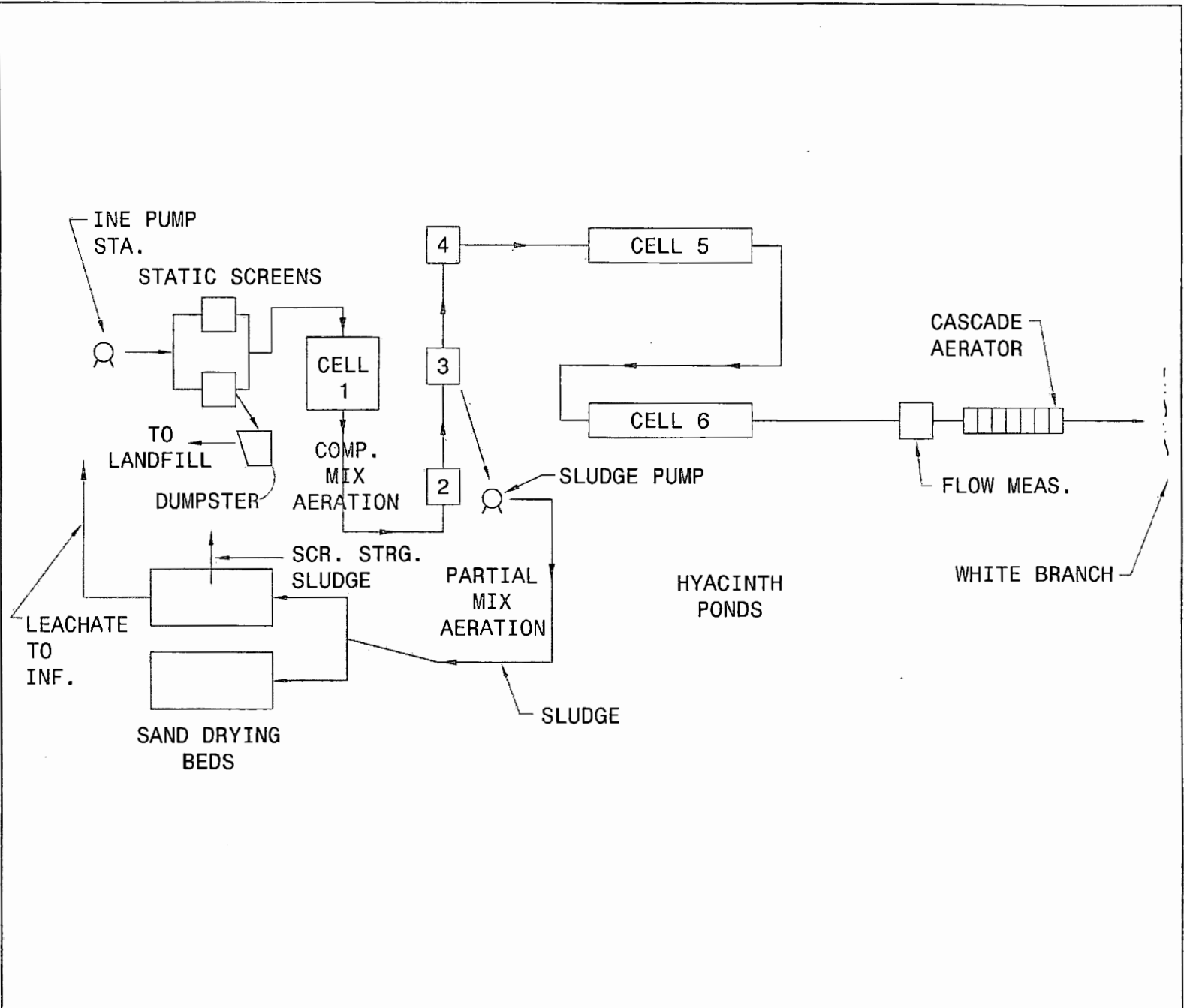
<p>SHEET No.</p> <p style="text-align: center;">1</p> <p>PROJECT No.</p> <p style="text-align: center;">74-071</p>	<p>HEAD AND NPDES PERMIT RENEWAL</p> <hr/> <p style="text-align: center;">SITE VICINITY MAP JIMMY CARR WWTP HEADLAND, ALABAMA</p>	<p>POLY, INC. 1935 Headland Avenue Daman AL 36029 334-793-4700</p> <p>102 Connet Lane 2125 University Blvd Ste A Shalmar, FL 32579 Tuscaloosa, AL 35401 850-609-1100 205-782-4037</p> <p>WWW.POLY-INC.COM</p>	<table border="1"> <tr> <td>DESIGNED BY</td> <td>LB</td> <td>DRAWN BY</td> <td>DH</td> </tr> <tr> <td>ENG / ARCH / SURVEYOR OF RECORD</td> <td></td> <td>REGISTRATION No.</td> <td></td> </tr> <tr> <td>DATE</td> <td colspan="3">FEBRUARY 27 2019</td> </tr> </table>	DESIGNED BY	LB	DRAWN BY	DH	ENG / ARCH / SURVEYOR OF RECORD		REGISTRATION No.		DATE	FEBRUARY 27 2019			<p>These drawings are copyrighted and the property of Poly-Inc. Any use, partial or full reproduction or circulation is prohibited without written agreement with Poly-Inc.</p>	
DESIGNED BY	LB	DRAWN BY	DH														
ENG / ARCH / SURVEYOR OF RECORD		REGISTRATION No.															
DATE	FEBRUARY 27 2019																

SHEET NO.
2
PROJECT No.
744071

HEADLAND WPDSS PERMIT RENEWAL
WWTP SCHEMATIC
JIMMY CARR WWTP
HEADLAND, ALABAMA

POLY, INC.
3025 Headland Avenue
Dothan, AL 36023
334-741-1100
100 Eastgate
Tomball, AL 36087
800-693-1100
WWW.POLY,INC.COM

DATE	REVISION	DESCRIPTION
REGULATORY 2/2019 <td>1 <td>REVISION</td> </td>	1 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>2 <td>REVISION</td> </td>	2 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>3 <td>REVISION</td> </td>	3 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>4 <td>REVISION</td> </td>	4 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>5 <td>REVISION</td> </td>	5 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>6 <td>REVISION</td> </td>	6 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>7 <td>REVISION</td> </td>	7 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>8 <td>REVISION</td> </td>	8 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>9 <td>REVISION</td> </td>	9 <td>REVISION</td>	REVISION
REGULATORY 2/2019 <td>10 <td>REVISION</td> </td>	10 <td>REVISION</td>	REVISION



FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

C. LAND APPLICATION OF BULK SEWAGE SLUDGE

Complete Section C for sewage sludge that is applied to the land, unless any of the following conditions apply:

- The sewage sludge meets the Table 1 ceiling concentrations, the Table 3 pollutant concentrations, Class A pathogen requirements, and one of vector attraction reduction options 1-8 (fill out B.4 instead); or
- The sewage sludge is sold or given away in a bag or other container for application to the land (fill out B.5 instead); or
- You provide the sewage sludge to another facility for treatment or blending (fill out B.6 instead).

Complete Section C for every site on which the sewage sludge that you reported in Section B.7 is applied.

C.1. Identification of Land Application Site.

- a. Site name or number _____
- b. Site location (Complete 1 and 2).
1. Street or Route # _____
County _____
City or Town _____ State _____ Zip _____
2. Latitude _____ Longitude _____
Method of latitude/longitude determination
____ USGS map ____ Field survey ____ Other
- c. Topographic map. Provide a topographic map (or other appropriate map if a topographic map is unavailable) that shows the site location.

C.2. Owner Information.

- a. Are you the owner of this land application site? ____ Yes ____ No
- b. If no, provide the following information about the owner:

Name _____
Telephone number _____
Mailing Address _____

C.3. Applier Information.

- a. Are you the person who applies, or who is responsible for application of, sewage sludge to this land application site?
____ Yes ____ No
- b. If no, provide the following information for the person who applies:

Name _____
Telephone number _____
Mailing Address _____

C.4. Site Type: Identify the type of land application site from among the following.

____ Agricultural land ____ Forest ____ Public contact site
____ Reclamation site ____ Other. Describe: _____

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

C.5. Crop or Other Vegetation Grown on Site.

- a. What type of crop or other vegetation is grown on this site?

- b. What is the nitrogen requirement for this crop or vegetation?

C.6. Vector Attraction Reduction.

Are any vector attraction reduction requirements met when sewage sludge is applied to the land application site?

_____ Yes _____ No

If yes, answer C.6.a and C.6.b;

- a. Indicate which vector attraction reduction option is met:

_____ Option 9 (Injection below land surface)

_____ Option 10 (Incorporation into soil within 6 hours)

- b. Describe, on this form or another sheet of paper, any treatment processes used at the land application site to reduce vector attraction properties of sewage sludge:

Complete Question C.7 only if the sewage sludge applied to this site since July 20, 1993, is subject to the cumulative pollutant loading rates (CPLRs) in 40 CFR 503.13(b)(2).

C.7. Cumulative Loadings and Remaining Allotments.

- a. Have you contacted the permitting authority in the State where the bulk sewage sludge subject to CPLRs will be applied, to ascertain whether bulk sewage sludge subject to CPLRs has been applied to this site on or since July 20, 1993? _____ Yes _____ No

If no, sewage sludge subject to CPLRs may not be applied to this site.

If yes, provide the following information:

Permitting authority _____

Contact Person _____

Telephone number _____

- b. Based upon this inquiry, has bulk sewage sludge subject to CPLRs been applied to this site since July 20, 1993?

_____ Yes _____ No

If no, skip C.7.c.

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

- c. Provide the following information for every facility other than yours that is sending, or has sent, bulk sewage sludge to CPLRs to this site since July 20, 1993. If more than one such facility sends sewage sludge to this site, attach additional pages as necessary.

Facility name

Mailing Address

Contact person

Title

Telephone number

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

D. SURFACE DISPOSAL

Complete this section if you own or operate a surface disposal site.

Complete Sections D.1 - D.5 for each active sewage sludge unit.

D.1. Information on Active Sewage Sludge Units.

- a. Unit name or number: _____
- b. Unit location (Complete 1 and 2).
1. Street or Route # _____
County _____
City or Town _____ State _____ Zip _____
2. Latitude _____ Longitude _____
Method of latitude/longitude determination: _____ USGS map _____ Field survey _____ Other _____
- c. Topographic map. Provide a topographic map (or other appropriate map if a topographic map is unavailable) that shows the site location.
- d. Total dry metric tons of sewage sludge placed on the active sewage sludge unit per 365-day period: _____ dry metric tons
- e. Total dry metric tons of sewage sludge placed on the active sewage sludge unit over the life of the unit: _____ dry metric tons
- f. Does the active sewage sludge unit have a liner with a maximum hydraulic conductivity of 1×10^{-7} cm/sec? _____ Yes _____ No
If yes, describe the liner (or attach a description):

- g. Does the active sewage sludge unit have a leachate collection system? _____ Yes _____ No
If yes, describe the leachate collection system (or attach a description). Also describe the method used for leachate disposal and provide the numbers of any Federal, State, or local permit(s) for leachate disposal:

- h. If you answered no to either D.1.f. or D.1.g., answer the following question:
Is the boundary of the active sewage sludge unit less than 150 meters from the property line of the surface disposal site?
_____ Yes _____ No
If yes, provide the actual distance in meters: _____
Provide the following information:
Remaining capacity of active sewage sludge unit, in dry metric tons: _____ dry metric tons
Anticipated closure date for active sewage sludge unit, if known: _____ (MM/DD/YYYY)
Provide, with this application, a copy of any closure plan that has been developed for this active sewage sludge unit.

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

D.2. Sewage Sludge from Other Facilities. Is sewage sent to this active sewage sludge unit from any facilities other than your facility?

Yes No

If yes, provide the following information for each such facility. If sewage sludge is sent to this active sewage sludge unit from more than one such facility, attach additional pages as necessary.

a. Facility name _____

b. Mailing Address _____

c. Contact person _____

Title _____

Telephone number _____

d. Which class of pathogen reduction is achieved before sewage sludge leaves the other facility?

Class A Class B None or unknown

e. Describe, on this form or another sheet of paper, any treatment processes used at the other facility to reduce pathogens in sewage sludge:

f. Which vector attraction reduction option is met for the sewage sludge at the receiving facility?

- Option 1 (Minimum 38 percent reduction in volatile solids)
- Option 2 (Anaerobic process, with bench-scale demonstration)
- Option 3 (Aerobic process, with bench-scale demonstration)
- Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
- Option 5 (Aerobic processes plus raised temperature)
- Option 6 (Raise pH to 12 and retain at 11.5)
- Option 7 (75 percent solids with no unstabilized solids)
- Option 8 (90 percent solids with unstabilized solids)
- None or unknown

g. Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge

h. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities performed by the other facility that are not identified in (d) - (g) above:

D.3. Vector Attraction Reduction

a. Which vector attraction option, if any, is met when sewage sludge is placed on this active sewage sludge unit?

- Option 9 (Injection below and surface)
- Option 10 (Incorporation into soil within 6 hours)
- Option 11 (Covering active sewage sludge unit daily)

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

D.3. Vector Attraction Reduction. (con't)

- b. Describe, on this form or another sheet of paper, any treatment processes used at the active sewage sludge unit to reduce vector attraction properties of sewage sludge:

D.4. Ground-Water Monitoring.

- a. Is ground-water monitoring currently conducted at this active sewage sludge unit, or are ground-water monitoring data otherwise available for this active sewage sludge unit?

_____ Yes _____ No

If yes, provide a copy of available ground-water monitoring data. Also, provide a written description of the well locations, the approximate depth to ground-water, and the ground-water monitoring procedures used to obtain these data.

- b. Has a ground-water monitoring program been prepared for this active sewage sludge unit? _____ Yes _____ No

If yes, submit a copy of the ground-water monitoring program with this permit application.

- c. Have you obtained a certification from a qualified ground-water scientist that the aquifer below the active sewage sludge unit has not been contaminated? _____ Yes _____ No

If yes, submit a copy of the certification with this permit application.

D.5. Site-Specific Limits. Are you seeking site-specific pollutant limits for the sewage sludge placed on the active sewage sludge unit?

_____ Yes _____ No

If yes, submit information to support the request for site-specific pollutant limits with this application.

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/99
OMB Number 2040-0086

E. INCINERATION

Complete this section if you fire sewage sludge in a sewage sludge incinerator.

Complete this section once for each incinerator in which you fire sewage sludge. If you fire sewage sludge in more than one sewage sludge incinerator, attach additional copies of this section as necessary.

E.1. Incinerator Information.

- a. Incinerator name or number: _____
- b. Incinerator location (Complete 1 and 2).
 - 1. Street or Route # _____
County _____
City or Town _____ State _____ Zip _____
 - 2. Latitude _____ Longitude _____
Method of latitude/longitude determination: _____ USGS map _____ Field survey _____ Other _____

E.2. Amount Fired. Dry metric tons per 365-day period of sewage sludge fired in the sewage sludge incinerator: _____ dry metric tons

E.3. Beryllium NESHAP.

- a. Is the sewage sludge fired in this incinerator "beryllium-containing waste," as defined in 40 CFR Part 61.31? _____ Yes _____ No

Submit, with this application, information, test data, and description of measures taken that demonstrate whether the sewage sludge incinerated is beryllium-containing waste, and will continue to remain as such.
- b. If the answer to (a) is yes, **submit with this application** a complete report of the latest beryllium emission rate testing and documentation of ongoing incinerator operating parameters indicating that the NESHAP emission rate limit for beryllium has been and will continue to be met.

E.4. Mercury NESHAP.

- a. How is compliance with the mercury NESHAP being demonstrated?
_____ Stack testing (if checked, complete E.4.b)
_____ Sewage sludge sampling (if checked, complete E.4.c)
- b. If stack testing is conducted, submit the following information with this application:

A complete report of stack testing and documentation of ongoing incinerator operating parameters indicating that the incinerator has met, and will continue to meet, the mercury NESHAP emission rate limit.

Copies of mercury emission rate tests for the two most recent years in which testing was conducted.
- c. If sewage sludge sampling is used to demonstrate compliance, submit a complete report of sewage sludge sampling and documentation of ongoing incinerator operating parameters indicating that the incinerator has met, and will continue to meet the mercury NESHAP emission rate limit.

E.5. Dispersion Factor.

- a. Dispersion factor, in micrograms/cubic meter per gram/second: _____
- b. Name and type of dispersion model: _____
- c. Submit a copy of the modeling results and supporting documentation with this application.

FACILITY NAME AND PERMIT NUMBER:

Farm Approved 1/14/99
OMB Number 2040-0086

E.6. Control Efficiency.

a. Control efficiency, in hundredths, for the following pollutants:

Arsenic: _____ Chromium: _____ Nickel: _____
Cadmium: _____ Lead: _____

b. Submit a copy of the results or performance testing and supporting documentation (including testing dates) with this application.

E.7. Risk Specific Concentration for Chromium.

a. Risk specific concentration (RSC) used for chromium, in micrograms per cubic meter: _____

b. Which basis was used to determine the RSC?

____ Table 2 in 40 CFR 503.43
____ Equation 6 in 40 CFR 503.43 (site-specific determination)

c. If Table 2 was used, identify the type of incinerator used as the basis:

____ Fluidized bed with wet scrubber
____ Fluidized bed with wet scrubber and wet electrostatic precipitator
____ Other types with wet scrubber
____ Other types with wet scrubber and wet electrostatic precipitator

d. If Equation 6 was used, provide the following:

Decimal fraction of hexavalent chromium concentration to total chromium concentration in stack exit gas: _____

Submit results of incinerator stack tests for hexavalent and total chromium concentrations, including date(s) of test, with this application.

E.8. Incinerator Parameters

a. Do you monitor Total Hydrocarbons (THC) in the sewage sludge incinerator's exit gas? _____ Yes _____ No

Do you monitor Carbon Monoxide (CO) in the sewage sludge incinerator's exit gas? _____ Yes _____ No

b. Incinerator type: _____

c. Incinerator stack height, in meters: _____

Indicate whether value submitted is: _____ Actual stack height _____ Creditable stack height

E.9. Performance Test Operating Parameters

a. Maximum Performance Test Combustion Temperature: _____

b. Performance test sewage sludge feed rate, in dry metric tons/day: _____

indicate whether value submitted is:

____ Average use _____ Maximum design

Submit, with this application, supporting documents describing how the feed rate was calculated.

c. Submit, with this application, information documenting the performance test operating parameters for the air pollution control device(s) used for this sewage sludge incinerator.

FACILITY NAME AND PERMIT NUMBER:

Form Approved 1/14/89
OMB Number 2040-0086

E.10. Monitoring Equipment. List the equipment in place to monitor the following parameters:

- a. Total hydrocarbons or carbon monoxide: _____
- b. Percent oxygen: _____
- c. Moisture content: _____
- d. Combustion temperature: _____
- e. Other: _____

E.11. Air Pollution Control Equipment. Submit, with this application, a list of all air pollution control equipment used with this sewage sludge incinerator.

Additional Information, if provided, will appear on the following pages.

April 05, 2017

Poly Environmental Corp. Env. Lab

Sample Delivery Group: L898414
Samples Received: 03/25/2017
Project Number:
Description: Headland

Report To: Mr. Steve Davis
PO Box 837
Dothan, AL 36303

Entire Report Reviewed By:



Janet Hensley
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

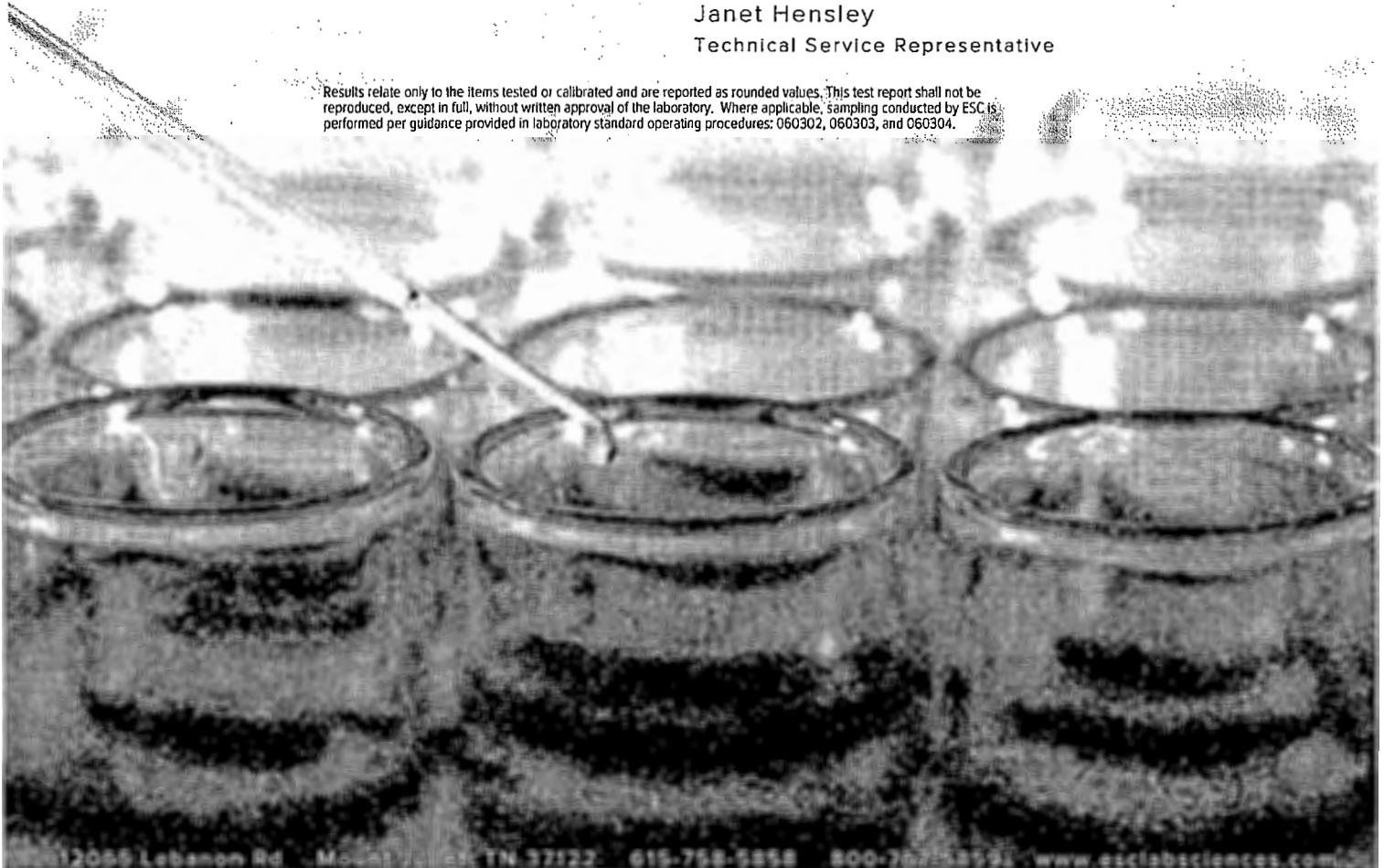


TABLE OF CONTENTS

ONE LAB. NATIONWIDE.



¹ Cp: Cover Page	1
² Tc: Table of Contents	2
³ Ss: Sample Summary	3
⁴ Cn: Case Narrative	4
⁵ Sr: Sample Results	5
301195 L898414-01	5
⁶ Gl: Glossary of Terms	6
⁷ Al: Accreditations & Locations	7
⁸ Sc: Chain of Custody	8

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

⁷Al

⁸Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



301195 L898414-01 WW

Collected by
Kevin Kilpatrick

Collected date/time
03/24/17 08:15

Received date/time
03/25/17 09:00

Method

Batch

Dilution

Preparation
date/time

Analysis
date/time

Analyst

Cp

Tc

SS

Cn

Sr

Gl

Al

Sc

ACCOUNT:

Poly Environmental Corp. Env. Lab

PROJECT:

SDG:

L898414

DATE/TIME:

04/05/17 15:50

PAGE:

3 of 19



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Janet Hensley
Technical Service Representative

- Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Gl
- ⁷Al
- ⁸Sc

Project Narrative

L898414 -01, -02 contains subout data that is included after the chain of custody.

301195

Collected date/time: 03/24/17 08:15

SAMPLE RESULTS - 01

L898414

ONE LAB. NATIONWIDE.



Additional Information

Analyte	Result	Units
Flow Measure	297	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sp

⁶ Gl

⁷ Al

⁸ Sc

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.



Abbreviations and Definitions

SDG Sample Delivery Group.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

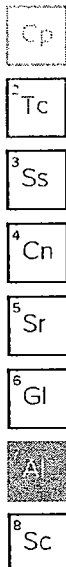
⁶G

⁷Al

⁸Sc

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

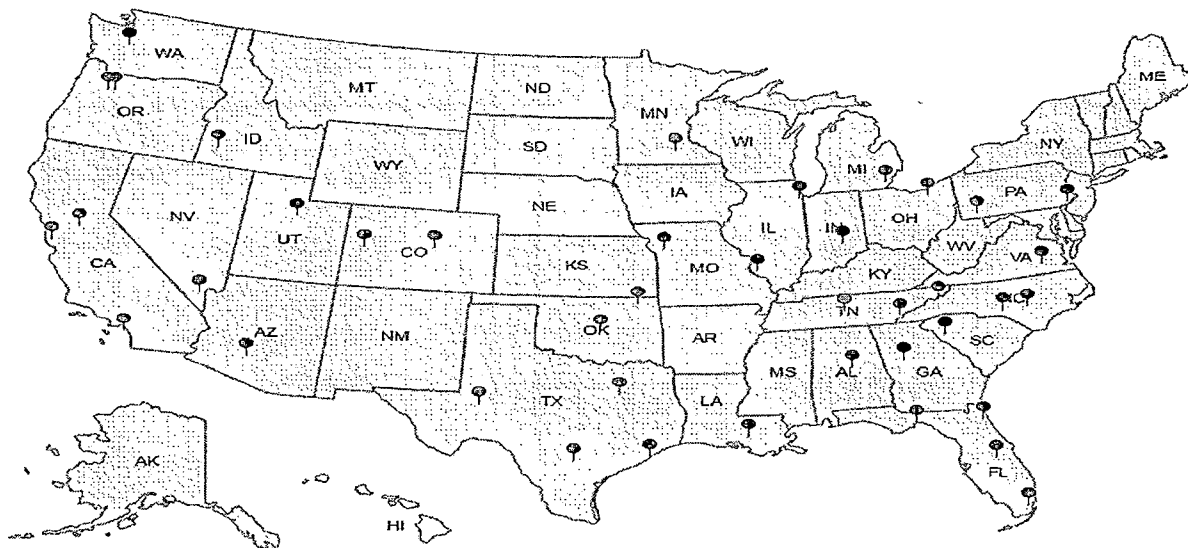
Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA-LAP, LLC	100789
A2LA - ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ¹⁴ Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.




Poly Environmental Corp. Env. Lab
 PO Box 837
 Dothan, AL 36303

Billing Information & Quote Number:
 Mr. Steve Davis
 P. O. Box 837
 Dothan, AL 36303

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



12055 Lebanon Rd
 Mooreville, TN 37122
 Phone: 615-758-5856
 Phone: 800-767-5859
 Fax: 615-758-5859

Report to:
 Mr. Steve Davis

Email To: sdavis@polyengineering.com;
 emurphree@polyengineering.com

Project Description:
 Headland

City/State Collected:
 Headland, AL
 Co. Code: 67

Phone: 334-793-4700
 Fax: 334-677-9477

Client/Project #

Lab Project #

Collected by (print):
 Kevin Kilpatrick

Site/Facility ID #

P.O. #

Collected by (signature):
 Kevin Kilpatrick

Rush? (Lab MUST Be Notified)
 Same Day 200%
 Next Day 100%
 Two Day 50%
 Three Day 25%

Date Results Needed

Immediately Packed on Ice: N Y

Email? No Yes
 FAX? No Yes

No. of Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs												
		WW				1	X											
TRIP BLANK		WW				1	X											DZ
Mercury 301/195	Grab	WW		3/24/17	8:15	1	X											OK

* Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other

Remarks: pH _____ Temp _____
 Flow 297 Other _____

Relinquished by: (Signature)
 Kevin Kilpatrick

Date: 3/24/17
 Time: 8:39

Received by: (Signature)
 Michael S...

Samples returned via: UPS
 FedEx Courier Other

Condition: Lab use only TD

Relinquished by: (Signature)
 Michael S...

Date: 3/24/17
 Time: 0840

Received by: (Signature)
 7176 4998 1730

Temp: 5.8°C Bottles Received:
 1 TTB

CDC Seal mark: Y N NA T

Relinquished by: (Signature)

Date: 3-28-17
 Time: 0900

Received for Lab by: (Signature)
 Maurice Mob...

Date: 3-28-17
 Time: 0900

pH Checked: NCP

**ESC LAB SCIENCES
Cooler Receipt Form**

Client: <u>POLY ENV</u>		SDG#	
Cooler Received/Opened On: <u>3/25 /17</u>		Temperature:	<u>5.8</u>
Received By: <u>Marina Malone</u>			
Signature:			
Receipt Check List		NP	Yes
COC Seal Present / Intact?			<input checked="" type="checkbox"/>
COC Signed / Accurate?			<input checked="" type="checkbox"/>
Bottles arrive intact?			<input checked="" type="checkbox"/>
Correct bottles used?			<input checked="" type="checkbox"/>
Sufficient volume sent?			<input checked="" type="checkbox"/>
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			



Laboratories LLC

a member of The GEL Group INC



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

April 05, 2017

Ms. Janice Cozby
Environmental Science Corporation
12065 Lebanon Road
Mount Juliet, Tennessee 37122

Re: Low Level Mercury Analysis
Work Order: 419382

Dear Ms. Cozby:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 28, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4289.

Sincerely,

Margo Herron
Margo Herron for
Julie Robinson
Project Manager

Purchase Order: S25339
Chain of Custody: WG964538
Enclosures



GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis Report for

ENVL001 Environmental Science Corporation

Client SDG: 419382 GEL Work Order: 419382

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Julie Robinson.

Reviewed by _____

Mary Hume

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: April 5, 2017

Company : Environmental Science Corporation
Address : 12065 Lebanon Road

Contact: Mount Juliet, Tennessee 37122
Ms. Janice Cozby
Project: Low Level Mercury Analysis

Client Sample ID: L898414-01 301195

Project: ENVL00116

Sample ID: 419382001

Client ID: ENVL001

Matrix: Waste Water

Collect Date: 24-MAR-17 08:15

Receive Date: 28-MAR-17

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
EPA 1631 Low Level Mercury Analysis "As Received"												
Mercury		2.30	0.200	0.500	ng/L		1	BCD1	04/04/17	0959	1651856	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 1631E		

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: April 5, 2017

Company : Environmental Science Corporation
Address : 12065 Lebanon Road

Mount Juliet, Tennessee 37122

Contact: Ms. Janice Cozby
Project: Low Level Mercury Analysis

Client Sample ID:	L898414-02 TB	Project:	ENVL00116
Sample ID:	419382002	Client ID:	ENVL001
Matrix:	BLANK		
Collect Date:	24-MAR-17 00:00		
Receive Date:	28-MAR-17		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
EPA 1631 Low Level Mercury Analysis "As Received"												
Mercury	J	0.45	0.200	0.500	ng/L		I	BCD1	04/04/17	0919	1651856	I

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
I	EPA 1631E		

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: April 5, 2017

Page 1 of 2

Environmental Science Corporation
12065 Lebanon Road
Mount Juliet, Tennessee

Contact: Ms. Janice Cozby

Workorder: 419382

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Metals Analysis-Mercury											
Batch	1651856										
QC1203757769	LCS										
Mercury	5.00			4.85	ng/L		97	(77%-123%)	BCD1	04/04/17	08:46
QC1203757768	MB										
Mercury			U	<0.2	ng/L					04/04/17	08:39
QC1203757770	419370001	MS									
Mercury	10.0	2.92		12.1	ng/L		91.9	(71%-125%)		04/04/17	10:19
QC1203757771	419370001	MSD									
Mercury	10.0	2.92		12.8	ng/L	5.7	99	(0%-24%)		04/04/17	10:26

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 419382

Page 2 of 2

Paramname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
-----------	-----	-------------	----	-------	------	------	-------	-------	------	------

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Metals
Technical Case Narrative
Environmental Science Corporation (SUBL)
SDG #: 419382

Product: Mercury Analysis Using the PS Analytical Millennium Automated Mercury Analyzer

Analytical Method: EPA 1631E

Analytical Procedure: GL-MA-E-018 REV# 17

Analytical Batch: 1651856

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
419382001	L898414-01 301195
419382002	L898414-02 TB
1203757768	Method Blank (MB)CVAF
1203757769	Laboratory Control Sample (LCS)
1203757770	419370001(L898029-01 WINDOR REPUBS) Matrix Spike (MS)
1203757771	419370001(L898029-01 WINDOR REPUBSD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information


Preparation/Analytical Method Verification

Bromine monochloride was added after sample was received. See the chain of custody for the date and time it was added. All recommendations and requirements defined in EPA method 1631 Revision E were satisfied and all data generated support use of analytical reports to satisfy regulatory compliance purposes.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Sub-Contract Chain of Custody

 **Environmental Science Corp**
 12065 Lebanon Road
 Mt. Juliet, TN 37122
 (615) 773-9756 (615) 758-5859 fax

49382

Sub-Contract Lab : GEL
 City / State : Charleston, SC
 Results Needed by : 4/6/17
 ESC Purchase Order # : S25339

WORKGROUP	WG964538
Date Created :	3/27/2017

Send Reports To : Janice Cozby jcozby@esclabsciences.com

SAMPLENO Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L898414-01 S21918187	WW	3/24/2017 8:15	Mercury by 1631	HG1631	1631E	301195
L898414-02 S21918188	WW	3/24/2017 0:00	Mercury by 1631	HG1631	1631E	TB

Samples collected in AL

PRESERVED
 Date: 3-28-17
 Time: 016
 Analyst: POD
 BrCl: 2327711-C
 Volume: 5ml

Relinquished by [Signature] Date: 032717
 Received by: Bryan Davis Date: 3-28-17 0907
 Relinquished by _____ Date: _____
 Received by: _____ Date: _____





Laboratories LLC

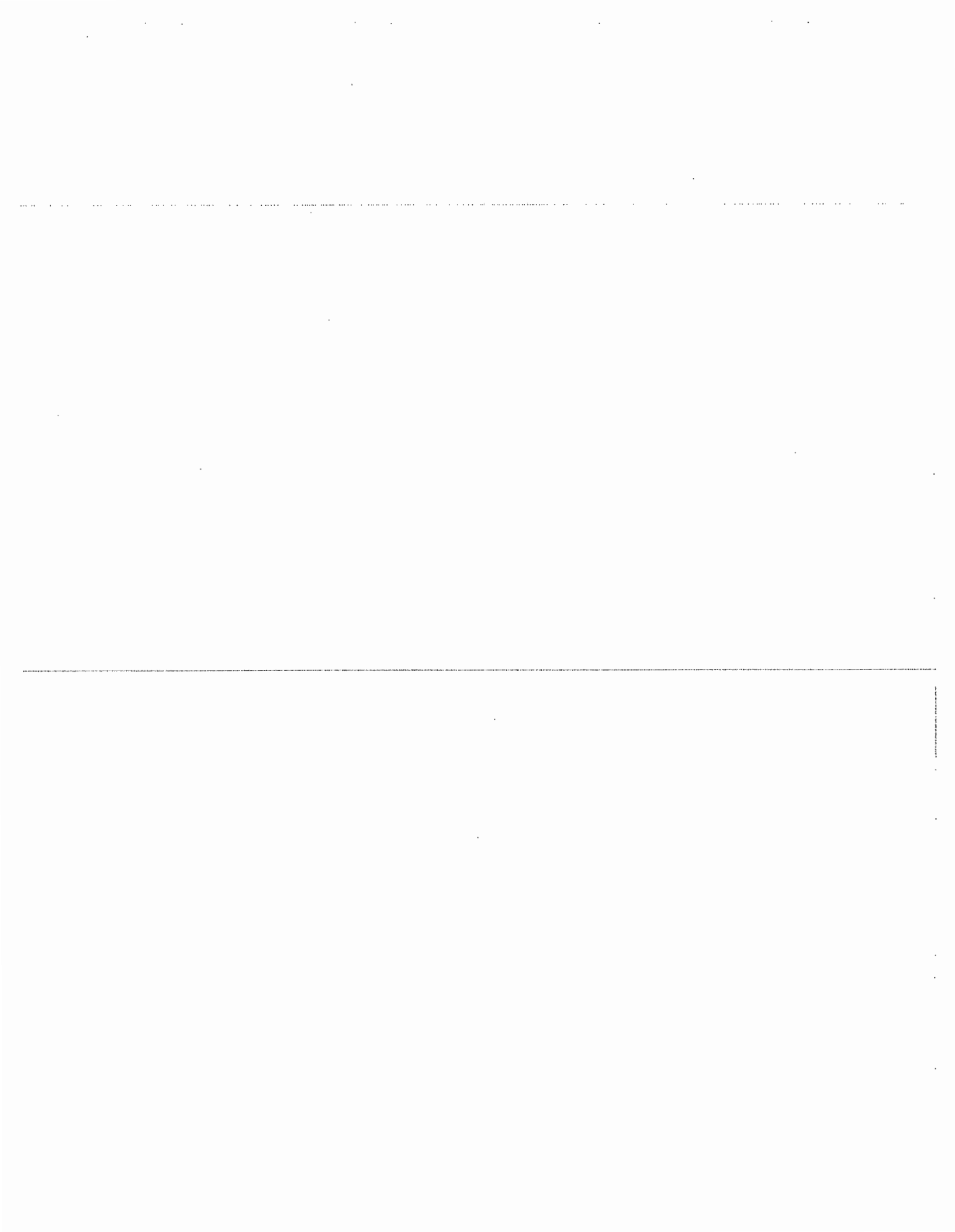
SAMPLE RECEIPT & REVIEW FORM

Client: <u>FAVL</u>		SDG/AR/COC/Work Order: <u>419382</u>			
Received By: <u>Bryan Davis</u>		Date Received: <u>3-28-17</u>			
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>Tracking # 7283 8325 7630</u>			
Suspected Hazard Information	Yes <input type="checkbox"/> No <input type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.			
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____			
COC/Samples marked as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): _____ CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3			
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____			
Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3	Samples requiring cold preservation within (0 ≤ deg. C)?*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice Ice Packs Dry ice None Other: _____ *all temperatures are recorded in Celsius TEMP: 18°C
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>41502132</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ___ No ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No ___ Sample ID's and containers affected: _____
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials JR Date 3-28-17 Page 1 of 1

List of current GEL Certifications as of 05 April 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (A133904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122016-21
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404





ANALYTICAL REPORT

April 09, 2018



Poly Environmental Corp. Env. Lab

Sample Delivery Group: L980514
Samples Received: 03/27/2018
Project Number:
Description:

Report To: Mr. Steve Davis
PO Box 837
Dothan, AL 36303

Entire Report Reviewed By:

Cassandra Foster
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



TABLE OF CONTENTS

ONE LAB. NATIONWIDE.



Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MERCURY 310690 L980514-01	5
Gl: Glossary of Terms	6
Al: Accreditations & Locations	7
Sc: Sample Chain of Custody	8



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



MERCURY 310690 L980514-01 WW

Collected by
Kevin Kilpatrick

Collected date/time
03/26/18 07:30

Received date/time
03/27/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
--------	-------	----------	-----------------------	--------------------	---------

Tc

Ss

Cn

Sr

Gl

Al

Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Cassandra Foster

Cassandra Foster
Technical Service Representative

Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

Al

⁶Sc

Project Narrative

L980514 -01, -02 contains subout data that is included after the chain of custody.

MERCURY 310690

Collected date/time: 03/26/18 07:30

SAMPLE RESULTS - 01

L980514

ONE LAB. NATIONWIDE.



Additional Information

Analyte	Result	Units
Flow Measure	0.194	

²Tc

³Ss

⁴Cn

⁵Si

⁶Gl

Al

⁶Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

AI

³ Sc

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

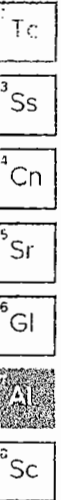
ONE LAB. NATIONWIDE. 

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-05-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ²	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA



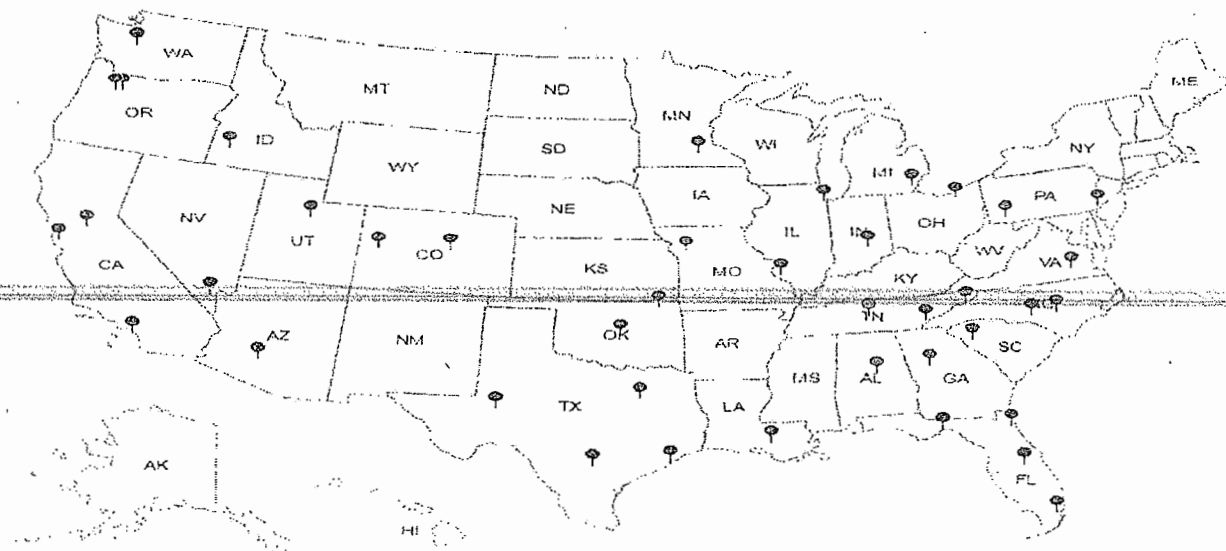
Third Party Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA - ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.




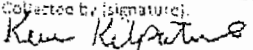
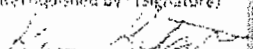
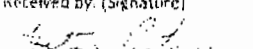
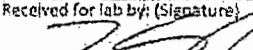
ACCOUNT:
Poly Environmental Corp. Env. Lab

PROJECT:

SDG:
L980514

DATE/TIME:
04/09/18 14:00

PAGE:
7 of 19

Poly Environmental Corp. Env. Lab PO Box 837 Dothan, AL 36303		Billing Information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303		Pres Chk		Analysis / Container / Preservative										Chain of Custody Page ___ of ___			
Report to: Mr. Steve Davis		Email To: sdavis@polyengineering.com ; emurphree@polyengineering.com														 17065 Leeman Rd Macon, GA 31202 Phone: 478-756-5858 Phone: 800-767-5859 Fax: 478-756-5859			
Project Description: Phone: 334-793-4700 Fax: 334-677-9477		City/State: Headland Ala Collected: 6/67		Lab Project #												L# 980514 B211			
Collected by (print): Kevin Kilpatrick		Site/Facility ID #		P.O. #												Acctnum: POLYENV Template: T83829 Prelogin: P638664 TSN: 702 - Cassandra Foster 7-10-18			
Collected by (signature): 		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #												Shipped Via: FedEx Ground			
Immediately Packed on Ice: <input checked="" type="checkbox"/>		Date Results Needed		No of Cntrs												Remarks Sample # (Lab only)			
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	No of Cntrs												
			WW				1												
TRIP BLANK			WW				1											-02	
Mercury WATER			WW	3126118	7:30													-01	
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Biosolids WW - Waste Water DW - Drinking Water OT - Other		Remarks:		Samples returned via: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier		Tracking # 9269 9204 8435												Sample Receipt Checklist COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume added: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If Applicable VOA Zero Headspace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Requisitioned by (Signature): 		Date: 7/27/18	Time: 7:47	Received by (Signature): 		Trip Blank Received: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> HCL/MeOH TB												If preservation required by Login: Date/Time	
Requisitioned by (Signature):		Date: 7/27/18	Time: 7:47	Received by (Signature):		Temp: 19.4 °C Bottles Received: 2													
Requisitioned by (Signature):		Date: 7/27/18	Time: 8:45	Received for lab by (Signature): 		Date: 3/27/18 Time: 8:45												Condition: NCF 100	



Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

April 03, 2018

Benita Miller
ESC Lab Sciences
12065 Lebanon Rd
Mount Juliet, TN 37122

RE: Project: L960514 N/A
Pace Project No.: 92378599

Dear Benita Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



ANALYTICAL RESULTS

Project: L960514 N/A
Pace Project No.: 92378599

Sample: MERCURY 310690	Lab ID: 92378599001	Collected: 03/26/18 07:30	Received: 03/28/18 10:40	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1631E Mercury, Low Level	Analytical Method: EPA 1631E Preparation Method: EPA 1631E							
Mercury	1.09	ng/L	0.50	1	04/02/18 14:39	04/02/18 18:34	7439-97-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



ANALYTICAL RESULTS

Project: L960514 N/A
Pace Project No.: 92378599

Sample: TRIP BLANK	Lab ID: 92378599002	Collected: 03/26/18 07:30	Received: 03/28/18 10:40	Matrix: Water					
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
1631E Mercury, Low Level Analytical Method: EPA 1631E Preparation Method: EPA 1631E									
Mercury	ND	ng/L	0.50	1	04/02/18 14:39	04/02/18 18:42	7439-97-6		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



QUALITY CONTROL DATA

Project: L960514 N/A
 Pace Project No.: 92378599

QC Batch: 404502 Analysis Method: EPA 1631E
 QC Batch Method: EPA 1631E Analysis Description: 1631E Mercury,Low Level
 Associated Lab Samples: 92378599001, 92378599002

METHOD BLANK: 2244044 Matrix: Water
 Associated Lab Samples: 92378599001, 92378599002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	04/02/18 15:23	

METHOD BLANK: 2244045 Matrix: Water
 Associated Lab Samples: 92378599001, 92378599002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	04/02/18 17:10	

METHOD BLANK: 2244046 Matrix: Water
 Associated Lab Samples: 92378599001, 92378599002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	04/02/18 18:49	

LABORATORY CONTROL SAMPLE: 2244047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ng/L	5	5.73	115	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2244048 2244049

Parameter	Units	92378709009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	ng/L	1.05	25	25	30.1	29.9	116	115	71-125	1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2244050 2244051

Parameter	Units	92378884001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	ng/L	2.86	25	25	30.3	30.6	110	111	71-125	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.



QUALIFIERS

Project: L960514 N/A
Pace Project No.: 92378599

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.
A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.




QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: L960514 N/A
Pace Project No.: 92378599

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92378599001	MERCURY 310690	EPA 1631E	404502	EPA 1631E	404503
92378599002	TRIP BLANK	EPA 1631E	404502	EPA 1631E	404503

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
 Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name:

ESK

Project #:

WO#: 92378599



Courier:
 Commercial Fed Ex UPS USPS Client
 Pace Other: _____

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Container: *3/28/18 AWB*

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer: IR Gun ID: *N/A* Type of Ice: Wet Blue None

Biological Tissue Frozen?

Yes No N/A

Cooler Temp (°C): *N/A* Correction Factor: Add/Subtract (°C) *N/A*

Temp should be above freezing to 6°C

Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): *N/A*

USDA Regulated Soil N/A, water sample

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

Yes No

Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? Yes No

		Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <i>WT</i>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review:

yy

Date: *3/29/18*

Project Manager SRF Review:

Date: *3/29/18*



	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, UHg

**Bottom half of box is to list number of bottle

Project #

W0# : 92378599

PH: KRG

Due Date: 04/04/18

CLIENT: 92-ESC LAB

Item#	BP4U-125 mL Plastic: Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic: Unpreserved (N/A)	BP2U-500 mL Plastic: Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic 2N Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WG7U-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG5U-250 mL Amber Unpreserved (N/A) (Cl-)	AG3S-1 liter Amber H2SO4 (pH < 2)	AG5S-250 mL Amber H2SO4 (pH < 2)	AG3A (DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	D69H-40 mL VOA HCl (N/A)	VG5T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Urp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP7T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL. Sedimentation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company: ESC Lab Sciences		Report To: ESC Subout Team		Attention: Mr. Steve Davis	
Address: 12085 Lebanon Road		Copy To:		Company Name:	
Mount Juliet, TN 37122		Purchase Order #: L980514		Address:	
Email: SuboutTeam@esc-labsciences.com		Project Name: N/A		Project Manager: Kevin Gschw	
Phone: (615)773-9756 Fax: (615)758-5859		Project #: N/A		Page Profile #: 6968	
Requested Due Date: 10-Apr				Regulatory Agency:	
				State / Location:	
				NC	

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9, -,) Sample Idc must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=ORGANIC, C=CLIP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)					
				START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analysis by 1631								
				DATE	TIME	DATE	TIME																			
1	MERCURY 310693	WT				26-Mar	7:30	1			1						X								92378599	001
2	TRIP BLANK	WT				26-Mar	7:30	1			1						X									002
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS		REMOVED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS					
		Benito Miller	27-Mar	14:34	A-Wilson / PALC	03/28/18	1040	N/A	N	N	Y		
ESC Batch: WG1089943													
ESC SDGs: L980514													
Location: Asheville, NC													

SAMPLER NAME AND SIGNATURE:
PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: _____ DATE Signed: _____

Received on	Ice (Y/N)	Custody	Sealed	Coated	Sample intact (Y/N)

Poly Environmental Corp. Env. Lab

PO Box 837
Dothan, AL 36303

Billing Information:
Mr. Steve Davis
P. O. Box 837
Dothan, AL 36303

Report to:
Mr. Steve Davis

Email To: sdavis@polyengineering.com;
emurphree@polyengineering.com

Project
Description:

City/State
Collected: *Headland Ala
Co 67*

Phone: 334-793-4700
Fax: 334-677-9477

Client Project #

Lab Project #

Collected by (print):
Kevin Kilpatrick

Site/Facility ID #

P.O. #

Collected by (signature):
Kevin Kilpatrick

Rush? (Lab MUST Be Notified)

Quote #,

Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Date Results Needed

Immediately
Packed on Ice N Y

No.
of
Cnts

HG1631250mlCr-HCl

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cnts	Analysis / Container / Preservative	Chain of Custody	Page
		WW				1	X		
TRIP BLANK		WW				1	X		
<i>Mercury 310690</i>		WW		<i>3/26/18</i>	<i>7:30</i>				

Chain of Custody Page of



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L#

Table #

Acctnum: POLYENV
Template: T83829
Prelogin: P638664
TSR: 702 - Cassandra Foster
AKJ 2-12-18
Shipped Via: FedEx Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other _____

Remarks:

pH _____ Temp _____
Flow *194* Other _____

Samples returned via: _____ Tracking # _____
 UPS FedEx Courier

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If applicable
VOA 200 Headspace: Y N
Preservation Correct/Checked: Y N

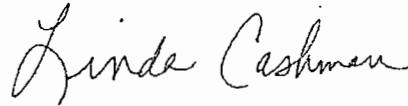
Relinquished by: (Signature) <i>Kevin Kilpatrick</i>	Date: <i>3/26/18</i>	Time: <i>7:47</i>	Received by: (Signature) <i>Peter Rusty</i>	Trip Blank Received: Yes/No HCL/MeOH TBK
Relinquished by: (Signature) <i>Kevin Kilpatrick</i>	Date: <i>3/26/18</i>	Time: <i>7:47</i>	Received by: (Signature)	Temp: _____ C: _____ Bottles Received: _____
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: _____ Time: _____ Hold: _____ Condition: NCF / OK

Poly Environmental Corp. Env. Lab

Sample Delivery Group: L1002932
Samples Received: 06/20/2018
Project Number:
Description:

Report To: Mr. Steve Davis
PO Box 837
Dothan, AL 36303

Entire Report Reviewed By:



Linda Cashman
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



TABLE OF CONTENTS

ONE LAB, NATIONWIDE.



Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MERCURY 312906 L1002932-02	5
Gl: Glossary of Terms	6
Al: Accreditations & Locations	7
Sc: Sample Chain of Custody	8



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



MERCURY 312906 L1002932-02 WW

Collected by
Kevin Kilpatrick

Collected date/time
06/19/18 07:10

Received date/time
06/20/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
--------	-------	----------	-----------------------	--------------------	---------

Tc

Ss

Cn

Sr

Gl

Al

Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Linda Cashman
Technical Service Representative

²Tc

³Ss

⁴Cn

⁵Sr

⁶Gl

⁷Al

⁸Sc

Project Narrative

L1002932 -01, -02 contains subout data that is included after the chain of custody.

MERCURY 312906

Collected date/time: 06/19/18 07:10

SAMPLE RESULTS - 02

L1002932

ONE LAB. NATIONWIDE.



Additional Information

Analyte	Result	Units
Flow Measure	0.15	

⁷Tc

³Ss

⁴Cn

Sl

⁶Gl

Al

²Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-05-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ²	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA



Third Party Agency Accreditations


A2LA - ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
AZLA - ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



Poly Environmental Corp. Env. Lab PO Box 837 Dothan, AL 36303		Billing Information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303		Plev. CNA		Analysis / Container / Preservation										Chain of Custody Page 1 of 1			
Report to Mr. Steve Davis		Email To: sdavis@polyengineering.com; emurphree@polyengineering.com																	
Project Description:		City/State Collected: Headland AL														12001 Johnson Rd Mobile, AL 36688 Phone: 800-758-8810 Fax: 251-758-5459			
Phone: 334-793-4700 Fax: 334-677-9477		Client Project #		Lab Project #												L# 61002932			
Collected by (name): Kewin Kilpatrick		Site/Facility ID #		P.O. #												C032			
Collected by (signature): Kew Kilpatrick		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #												Accnum: POLYENV Template: T83829 Prefix: P658386 TSR: 702 - Cassandra Foster PO: 6-12-18			
Immediate Packed on Ice: N <input type="checkbox"/> Y <input checked="" type="checkbox"/>		Data Results Needed		No. of Conts												Shipped Via: FedEx Ground			
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	HG1631 250mClr-HCl												Remarks	Sample # (alt only)
		WW				1	X												
TRIP BLANK		WW				1	X												-01
Mercery 3/24/18		WW		6/19/18	7:10	1													-02
* Waters: SS - Soil AIR - Air F - Filter GW - Groundwater B - Biosolids WW - Waste Water DW - Drinking Water OT - Other																			
Remarks:																			
Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier																			
Tracking # 4380 6671 9324																			
Requisitioned by (Signature): Kew Kilpatrick		Date: 6/19/18		Title: 7:10		Received by (Signature): [Signature]		Trip Blank Received: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No HCL / Mechl TB		pH _____ Temp _____ TSS 150 Other _____						Sample Receipt Checklist: CCC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N CCC Signed/Occurred: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottle/Label Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct Lot/Label used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N VOA Int. Rechecked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			
Requisitioned by (Signature): [Signature]		Date: 6/19/18		Title: 7:10		Received by (Signature): [Signature]		Temp: 25.8 °C 15 °F HCL / Mechl TB		If preservation required by Log in: Date/Time									
Requisitioned by (Signature):		Date:		Time:		Received for Lab by (Signature): [Signature]		Date: 6/20/18 Time: 0845		Hold:		Condition: NCF 100							



Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

June 27, 2018

Benita Miller
ESC Lab Sciences
12065 Lebanon Rd
Mount Juliet, TN 37122

RE: Project: L1002932
Pace Project No.: 92389279

Dear Benita Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on June 21, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



SAMPLE ANALYTE COUNT

Project: L1002932
Pace Project No.: 92389279

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92389279001	TRIP BLANK	EPA 1631E	RDT	1	PASI-A
92389279002	MERCURY 312906	EPA 1631E	RDT	1	PASI-A

REPORT OF LABORATORY ANALYSIS

*This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.*



Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: L1002932
Pace Project No.: 92389279

Sample: TRIP BLANK	Lab ID: 92389279001	Collected: 06/19/18 00:00	Received: 06/21/18 10:10	Matrix: Water					
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
1631E Mercury, Low Level	Analytical Method: EPA 1631E Preparation Method: EPA 1631E								
Mercury	ND	ng/L	0.50	1	06/24/18 09:00	06/26/18 17:06	7439-97-6		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: L1002932

Pace Project No.: 92389279

Sample: MERCURY 312906	Lab ID: 92389279002	Collected: 06/19/18 07:10	Received: 06/21/18 10:10	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1631E Mercury,Low Level		Analytical Method: EPA 1631E Preparation Method: EPA 1631E						
Mercury	1.88	ng/L	0.50	1	06/24/18 09:00	06/26/18 17:13	7439-97-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



QUALITY CONTROL DATA

Project: L1002932
 Pace Project No.: 92389279

QC Batch: 416295 Analysis Method: EPA 1631E
 QC Batch Method: EPA 1631E Analysis Description: 1631E Mercury, Low Level
 Associated Lab Samples: 92389279001, 92389279002

METHOD BLANK: 2308411 Matrix: Water
 Associated Lab Samples: 92389279001, 92389279002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	06/26/18 13:41	

METHOD BLANK: 2308412 Matrix: Water
 Associated Lab Samples: 92389279001, 92389279002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	06/26/18 15:49	

METHOD BLANK: 2308413 Matrix: Water
 Associated Lab Samples: 92389279001, 92389279002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	06/26/18 17:44	

LABORATORY CONTROL SAMPLE: 2308414

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ng/L	5	5.28	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2308415 2308416

Parameter	Units	92389304001		2308415		2308416		% Rec	% Rec	% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS Result					
Mercury	ng/L	1.13	25	25	28.0	28.1	107	108	71-125	0		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2308417 2308418

Parameter	Units	92389029001		2308417		2308418		% Rec	% Rec	% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS Result					
Mercury	ng/L	1.97	25	25	30.8	30.6	115	115	71-125	1		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: L1002932
Pace Project No.: 92389279

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.
A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: L1002932
Pace Project No.: 92389279

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92389279001	TRIP BLANK	EPA 1631E	416295	EPA 1631E	416503
92389279002	MERCURY 312906	EPA 1631E	416295	EPA 1631E	416503

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name:

Project #:

WO#: 92389279



Courier: Fed Ex UPS USPS Client
 Commercial Pace Other:

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initial Person Examining Contents: 6/21/18

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: N/A Type of Ice: Wet Blue None

Cooler Temp (°C): _____ Correction Factor: Add/Subtract (°C) _____

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): _____

Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil: (N/A, water sample)

Did samples originate in a quarantine zone within the United States; CA, NY, or SC (check maps)?

Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? Yes No

Yes No

		Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Sample Labels Match COC?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix:	WT	
Headspace in VOA Vials (>5-8mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: NMG

Date: 6/21/18

Project Manager SRF Review: NMG

Date: 6/21/18



Document Name:
Sample Condition Upon Receipt(SCUR)
Document No.:
F-CAR-CS-033-Rev.06

Document Revised: February 7, 2018
Page 1 of 2
Issuing Authority:
Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project # **MO#: 92389279**

EXCEPTIONS: VOA, Coliform, TOC, Oil and Grease, DUC/6035(water) POC, Hg

PM: KRG Due Date: 07/06/18

**Bottom half of box is to list number of bottle

CLIENT: 92-ESC LAB

1	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)					
2		BP3U-250 mL Plastic Unpreserved (N/A)					
3		BP2U-500 mL Plastic Unpreserved (N/A)					
4		BP1U-1 liter Plastic Unpreserved (N/A)					
5		BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)					
6		BP3N-250 mL plastic HNO3 (pH < 2)					
7		BP4Z-125 mL Plastic ZIN Acetate & NaOH (>9)					
8		BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)					
9		WGFU-Wide-mouthed Glass jar Unpreserved					
10		AG1U-1 liter Amber Unpreserved (N/A) (Cl-)					
11		AG1H-1 liter Amber HCl (pH < 2)					
12		AG3U-250 mL Amber Unpreserved (N/A) (Cl-)					
		AG1S-1 liter Amber H2SO4 (pH < 2)					
		AG3S-250 mL Amber H2SO4 (pH < 2)					
		AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)					
		DG9H-40 mL VOA HCl (N/A)					
		VG5T-40 mL VOA Na2S2O3 (N/A)					
		VG5U-40 mL VOA Uno (N/A)					
		DG9P-40 mL VOA H3PO4 (N/A)					
		VOAK (6 vials per kit)-S035 kit (N/A)					
		V/GK (3 vials per kit)-VPH/Gas kit (N/A)					
		SP5T-125 mL Sterile Plastic (N/A - lab)					
		SP2T-250 mL Sterile Plastic (N/A - lab)					
		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)					
		AG0U-100 mL Amber Unpreserved vials (N/A)					
		VSGU-20 mL Scintillation vials (N/A)					
		DG9U-40 mL Amber Unpreserved vials (N/A)					

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon Receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR Certification Office (i.e. Out of field, incorrect preservative, out of temp, incorrect containers.

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Company: ESC Lab Sciences Address: 12065 Lebanon Road Mount Juliet, TN 37122 Email: Subouffteam@esc-labsciences.com Phone: (615)773-9756 Fax: (615)758-5859 Requested Due Date: 6-Jul	Section B Required Project Information: Report To: ESC Subout Team Copy To: Purchase Order #: L1002932 Project Name: N/A Project #: N/A	Section C Invoice Information: Attention: Mr. Steve Davis Company Name: Address: Pace Quote: Pace Project Manager: Kevin Godwin Pace Profile #: 6968
--	--	--

ITEM #	SAMPLE ID <small>One Character per box. (A-Z, 0-9 / , -) Sample IDs must be unique</small>	MATRIX <small>Drinking Water DW Water WT Waste Water WW Product P Solid/Solid SL Oil OL Wipe WP Air AR Other OT Thruu TR</small>	CODE	MATRIX CODE (See valid codes to left)	SAMPLER TYPE (C=CRAB G=CONF)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Requested Analysis - Filled (Y/N)	Residual Chlorine (Y/N)																			
						START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other			Mercury by 1631																		
						DATE	TIME	DATE	TIME																															
1	TRIP BLANK	WT						19-Jun	0:00	1																														
2	MERCURY 312905	WT						19-Jun	7:10	1																														
3																																								
4																																								
5																																								
6																																								
7																																								
8																																								
9																																								
10																																								
11																																								
12																																								

ADDITIONAL COMMENTS	ANALYZED BY AFFILIATION	DATE	TIME	APPROVED BY AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Benita Miller	6/21	13:50	Garrett March	6/21	10:10	N/A	N	N	Y

ESC Batch: WG1127067 ESC SDGs: L1002932 Location: Asheville, NC			SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER:			DATE Signed:			TEMP in C	Recovered on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Stored in Cool (Y/N)
---	--	--	---	--	--	--------------	--	--	-----------	------------------------	-----------------------------	------------------------------

Poly Environmental Corp. Env. Lab

PO Box 837
Dothan, AL 36303

Billing Information:

Mr. Steve Davis
P. O. Box 837
Dothan, AL 36303

Pres
Chk

Analysis / Container / Preservative



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



Report to:
Mr. Steve Davis

Email To: sdavis@polyengineering.com;
emurphree@polyengineering.com

Project
Description:

City/State: **Headland AL**
Collected: **# 67**

Phone: **334-793-4700**
Fax: **334-677-9477**

Client Project #

Lab Project #

Collected by (print):

Kevin Kilpatrick

Site/Facility ID #

P.O. #

Collected by (signature):

Kevin Kilpatrick

Rush? (Lab MUST Be Notified)

___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately
Packed on Ice **N Y**

No.
of
Cnts

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cnts
		WW				1
TRIP BLANK		WW				1
Mercury 3/29/18		WW		6/19/18	7:10	

* Matrix:

- SS - Soil AIR - Air F - Filter
- GW - Groundwater B - Bioassay
- WW - WasteWater
- DW - Drinking Water
- OT - Other

Remarks:

Samples returned via:
 UPS FedEx Courier

Tracking #

pH _____ Temp _____
Flow **.150** Other _____

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 If Applicable
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

Relinquished by: (Signature)

Kevin Kilpatrick

Date:

6/19/18

Time:

7:24

Received by: (Signature)

Adam Dimmock

Trip/Blank Received: Yes/No

HCL/ MeOH
 TBR

Relinquished by: (Signature)

Adam Dimmock

Date:

6/19/18

Time:

0904

Received by: (Signature)

Temp: C F Bottles Received:

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: _____ Time: _____

Hold

Condition:
NCF / OK

Polyenvironmental Corporation
Environmental Laboratory

P.O. Box 837

Dothan, Alabama 36302

334-792-6348

08/17/2017

City Of Headland

9 Park Street

Headland,AL 36345

ATTN: Jason Singleary

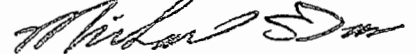
Headland Southside Lagoon

Mercury(low level) performed by Environmental Science Corp.
ESC Sample Number: L923294-01

2017-08-0116

Polyenvironmental Corporation

Respectfully Submitted,



Michael S. Davis, Lab Manager

Poly Environmental Corp. Env. Lab

Sample Delivery Group: L923294
Samples Received: 07/19/2017
Project Number:
Description: Headland

Report To: Mr. Steve Davis
PO Box 837
Dothan, AL 36303

Entire Report Reviewed By:



Janet Hensley
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



TABLE OF CONTENTS

ONE LAB. NATIONWIDE.



Tc: Table of Contents	2
Cn: Case Narrative	3
Gl: Glossary of Terms	4
Al: Accreditations & Locations	5
Sc: Chain of Custody	6



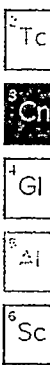


All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Janet Hensley
Technical Service Representative

Project Narrative

L923294 -01, -02 contains subout data that is included after the chain of custody.





Abbreviations and Definitions

SDG	Sample Delivery Group.
-----	------------------------

Qualifier	Description
-----------	-------------

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

²Tc

³Cn

⁴G

⁵Al

⁶Sc

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ^{1,4}	2006
Louisiana	A130792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA - ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ** Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



Tc
3 Cn
4 Gl
5 Sc

Poly Environmental Corp. Env. Lab
 PO Box 837
 Dothan, AL 36303

Billing Information:
 Mr. Steve Davis
 P. O. Box 837
 Dothan, AL 36303

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

32065 Lebanon Rd
 Mount Juliet, TN 37112
 Phone: 615-256-2658
 Phone: 800-757-5953
 Fax: 615-759-5255

923294
 D147
 Acct#m: POLYENV
 Template: T83829
 Prologis: P605941
 TSC: 067 - Janet Hensley
 PB: 7-6-2017

Shipped Via: FedEx Ground
 Remarks: Sample # (Lab only)

Report to
 Mr. Steve Davis

Email To: sdavis@polyengineering.com;
 emurphree@polyengineering.com

Project Description: *Headland*

City/State Collected: *HEADLAND*

Phone: 334-793-4700
 Fax: 334-677-9477

Client Project #

Lab Project #

Collected by (Print): *JASON SINKOVICH*

Site/Facility ID #

P.O. #

Collected by (Signature): *[Signature]*
 Immediately checked on line: M Y V

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 15 Day (Rad Only)
 Three Day

Quote #
 Date Results Needed

HG1631 250mlClir-HCl

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cntrs															
<i>ESL 30-265</i>		WW				1	X														
TRIP BLANK		WW				1	X														
	<i>GRAB</i>			<i>7/18/17</i>	<i>950</i>																

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - Waste Water
 DW - Drinking Water
 OT - Other

Remarks:
 Samples returned via:
 UPS FedEx Courier

Sample Receipt Check:
 COP Seal Present/Intact: Y N
 POC Signed/Accurate: Y N
 Bottles Arrive Intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N

Relinquished by (Signature): *[Signature]*

Date: *7/18/17*

Time: *1004*

Received by (Signature): *Beth Bassett*

Trip Blank Received: Yes No
 HCL/MeOH
 TBH

Relinquished by (Signature): *Beth Bassett*

Date: *7/18/17*

Time: *1006*

Received by (Signature): *[Signature]*

Temp: *23.5* °C
Amb
 Bottles Received: *2*

If preservation required by Log in: Date/Time

Relinquished by (Signature): *[Signature]*

Date: *7/19/2017*

Time: *0845*

Received for Lab use (Signature): *[Signature]*

Date: *7/19/2017*

Hold: Condition: *NCF / 08*



Laboratories LLC

a member of The GEL Group INC



PO Box 50712 Charleston, SC 29417
2040 Storage Road Charleston, SC 29407
P 843 556-8171
F 843 756-1176

gel.com

August 16, 2017

Ms. Janice Cozby
Environmental Science Corporation
12065 Lebanon Road
Mount Juliet, Tennessee 37122

Re: Low Level Mercury Analysis
Work Order: 428423

Dear Ms. Cozby:

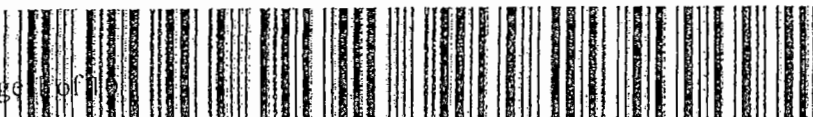
GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 20, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4289.

Sincerely,

Julie Robinson
Project Manager

Purchase Order: S26114
Chain of Custody: WG1000526
Enclosures



GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report
for**

ENVL001 Environmental Science Corporation
Client SDG: 428423 GEL Work Order: 428423

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- B Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Julie Robinson.

Reviewed by _____

Julie Robinson

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 16, 2017

Company : Environmental Science Corporation
Address : 12065 Lebanon Road

Mount Juliet, Tennessee 37122

Contact: Ms. Janice Cozby
Project: Low Level Mercury Analysis

Client Sample ID: L923294-01 EFF 304265
Sample ID: 428423001
Matrix: Waste Water
Collect Date: 18-JUL-17 09:50
Receive Date: 20-JUL-17
Collector: Client

Project: ENVL00116
Client ID: ENVL001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
EPA 1631 Low Level Mercury Analysis "As Received"												
Mercury	FB	2.01	0.200	0.500	ng/L		1	BCD1	08/15/17	0904	1687276	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 1631E		

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 16, 2017

Company : Environmental Science Corporation
Address : 12065 Lebanon Road

Mount Juliet, Tennessee 37122

Contact: Ms. Janice Cozby
Project: Low Level Mercury Analysis

Client Sample ID:	L923294-02 TB	Project:	ENVL00116
Sample ID:	428423002	Client ID:	ENVL001
Matrix:	BLANK		
Collect Date:	18-JUL-17 00:00		
Receive Date:	20-JUL-17		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
EPA 1631 Low Level Mercury Analysis "As Received"												
Mercury	FB	1.03	0.200	0.500	ng/L		1	BCD1	08/15/17	1442	1687276	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 1631E		

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: August 16, 2017

Page 1 of

Environmental Science Corporation

12065 Lebanon Road
Mount Juliet, Tennessee

Contact: Ms. Janice Cozby

Workorder: 428423

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Metals Analysis-Mercury											
Batch	1687276										
QC1203843059	LCS										
Mercury	5.00			5.24	ng/L		105	(77%-123%)	BCD1	08/15/17	07:0
QC1203843058	MB										
Mercury			U	<0.2	ng/L					08/15/17	06:5
QC1203843060	428418001	MS									
Mercury	10.0	FB	8.42	17.8	ng/L		93.4	(71%-125%)		08/15/17	15:2
QC1203843062	428418001	MSD									
Mercury	10.0	FB	8.42	17.3	ng/L	2.71	88.6	(0%-24%)		08/15/17	15:3

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 428423

Page 2 of

Paramname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
-----------	-----	-------------	----	-------	------	------	-------	-------	------	------

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Metals
Technical Case Narrative
Environmental Science Corporation (SUBL)
SDG #: 428423

Product: Mercury Analysis Using the PS Analytical Millennium Automated Mercury Analyzer

Analytical Method: EPA 1631E

Analytical Procedure: GL-MA-E-018 REV# 18

Analytical Batch: 1687276

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
428423001	L923294-01 EFF 304265
428423002	L923294-02 TB
1203843058	Method Blank (MB)CVAF
1203843059	Laboratory Control Sample (LCS)
1203843060	428418001(L923319-01 MAXTON EFFS) Matrix Spike (MS)
1203843062	428418001(L923319-01 MAXTON EFFSD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments

Mercury was present at quantifiable concentrations in field blanks and/or trip blanks that were received with these samples. The samples associated with these blanks did not contain mercury at concentrations more than 5x the amounts in the blanks, therefore, this data may not be reported or otherwise used for regulatory purposes. 428423001 (L923294-01 EFF 304265) and 428423002 (L923294-02 TB).

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Sub-Contract Chain of Custody

Environmental Science Corp
 12065 Lebanon Road
 Mt. Juliet, TN 37122
 (615) 773-9756 (615) 758-5859 fax

Sub-Contract Lab : GEL
 City / State : Charleston, SC
 Results Needed by : 08/7/17
 ESC Purchase Order # : S26114

428423

WORKGROUP	WG1000526
Date Created :	07/19/17

Send Reports To : Janice Cozby jcozby@esclabsciences.com

SAMPLENO Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L923294-01 S22919101	WW	2017/07/18 09:50:0	Mercury by 1631	HG1631	1631E	EFF 304265
L923294-02 S22919102	WW	2017/07/18 00:00:0	Mercury by 1631	HG1631	1631E	TB

sampled in AL

PRESERVED

Date: 7-20-17
 Time: 1200
 Analyst: Jake H.
 BrCl: 2571449-BRU
 Volume: 10ml

Relinquished by *J Cozby* Date: 071917
 Received by: *JH* Date: 072017 0904
 Relinquished by _____ Date: _____
 Page 8 of 10 by: _____ Date: _____




SAMPLE RECEIPT & REVIEW FORM

Client: ENVL		SDG/AIR/COC/Work Order: 428923		
Received By: Jake H.		Date Received: 7-20-17		
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other #7372 1967 7865 #7372 1967 7854		
Suspected Hazard Information	Yes <input type="checkbox"/> No <input type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.		
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____		
COC/Samples marked or classified as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/hr Classified as: Rad 1 Rad 2 Rad 3		
Is package, COC, and/or Samples marked HAZ?	<input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____		
Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice Ice Packs Dry ice <input checked="" type="checkbox"/> None Other: _____ *all temperatures are recorded in Celsius TEMP: <u>21°C</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>41502132</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: _____ If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ___ No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected: _____
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's and containers affected: <u>23141442 ; 23141438</u> mistabled, written on chain (corrected)
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed):				

PM (or PMA) review: Initials MCLA Date 7/21/17 Page 1 of 1

List of current GEL Certifications as of 16 August 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO 17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (A133904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S. Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-23
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404


Poly Environmental Corp. Env. Lab PO Box 837 Dothan, AL 36303			Billing Information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303			Pres Chk			Analysis / Container / Preservative						Chain of Custody Page 1 of 1	
Report to Mr. Steve Davis			Email To: sdavis@polyengineering.com; emurphrea@polyengineering.com			HG1631, 250mClr-HCl								12065 Lebanon Rd Mount Laurel, TN 37122 Phone: 615-758-5552 Phone: 800-397-5859 Fax: 615-758-5855		
Project Description: <i>Headland</i>			City/State Collected: <i>Headland</i>									L# <i>923294</i>		Table #: <i>D147</i>		
Phone: 334-793-4700 Fax: 334-677-9477			Client Project #									Lab Project #			Acctnum: POLYENV Template: T83829	
Collected by (print): <i>JASON SINKLETZ</i> (Signature): <i>[Signature]</i> Immediately Packed or No: <i>N</i> <input type="checkbox"/> <i>Y</i> <input checked="" type="checkbox"/>			Site/Facility ID #									P.O. #			Pralogin: P605941 TSP: 067 - Janet Hensley	
Rush? (Lab MUST be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day			Quote #			Date Results Needed			No. of Concs:							
Sample ID		Comp/Grab	Matrix *	Depth	Date	Time	No. of Concs	1	X	1	X	Remarks	Sample # (job only)			
<i>ESSENT 304-65</i>			WW													
TRIP BLANK			WW													
		<i>GWS</i>			<i>7/18/17</i>	<i>950</i>										
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - Waste Water DW - Drinking Water OT - Other			Remarks:			pH _____ Temp _____ Flow _____ Other _____			Sample Receipt Checklist CQC Seal Present/Intact: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N CQC Signed/Accurate: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles Arrive Intact: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N I.E. Sample/Cable: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N VOA Zero Headspaces: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input type="checkbox"/> <input checked="" type="checkbox"/> Y <input type="checkbox"/> N							
Samples returned via: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier			Tracking #: <i>7372 1958 6433</i>			Received by (Signature): <i>Beth Bassett</i>			Trip Blank Received: (Yes/No) <input type="checkbox"/> <input checked="" type="checkbox"/> HCL / MeOH TB							
Requisitioned by: (Signature) <i>Jason Sinkletz</i>			Date: <i>7/18/17</i>	Time: <i>1004</i>	Received by (Signature): <i>Beth Bassett</i>			Temp: <i>23.54</i> °C Ambient: <i>11</i>			Bottles Received: <i>2</i>			If preservation required by Login: Date/Time		
Requisitioned by: (Signature) <i>Beth Bassett</i>			Date: <i>7/18/17</i>	Time: <i>1006</i>	Received for Lab by: (Signature) <i>Dant [Signature]</i>			Date: <i>7/18/2017</i>			Time: <i>0845</i>	Hold:	Condition: <i>NCE / DJ</i>			

Poly Environmental Corp. Env. Lab
 PO Box 837
 Dothan, AL 36303


Billing Information:
 Mr. Steve Davis
 P. O. Box 837
 Dothan, AL 36303

Pr. Chk	Analysis / Container / Preservative										

Chain of Custody Page 1 of 1



12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



Report to:
Mr. Steve Davis

Email To: sdavis@polyengineering.com;
 emurphree@polyengineering.com

Project Description:

City/State Collected: **HEADLAND**

Phone: 334-793-4700
 Fax: 334-677-9477

Client Project #

Lab Project #

Collected by (print):
JASON SIMPSON

Site/Facility ID #

P.O. #

Collected by (signature):
Jason Simpson

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Quote #

Immediately Packed on Ice N ___ Y ___

Date Results Needed

No. of

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs
		WW				1
TRIP BLANK		WW				1
	Grab			7/18/17	950	

HG1631250ml(17-HCl)

L#
 Table #
 Acctnum: POLYENV
 Template: T83829
 Prelogin: P605941
 TSR: 067 - Janet Hensley
 PB: 76-677-17
 Shipped Via: FedEX Ground

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
 pH _____ Temp _____
 Flow _____ Other _____
 Samples returned via:
 UPS FedEx Courier
 Tracking # _____

Sample Receipt Checklist:
 Coc Seal Present/Intact: ___ Y ___ N
 Coc Signed/Accurate: ___ Y ___ N
 Bottles arrive intact: ___ Y ___ N
 Correct bottles used: ___ Y ___ N
 Sufficient volume sent: ___ Y ___ N
 If Applicable:
 VOA zero Headspace: ___ Y ___ N
 Preservation Correct/Checked: ___ Y ___ N

Relinquished by: (Signature)
Jason Simpson

Date: 7/18/17
 Time: 1004

Received by: (Signature)
Beth Bassett

Tri-BLANK Received: Yes/No
 HCL/MeOH TBR

Relinquished by: (Signature)
Beth Bassett

Date: 7/18/17
 Time: 1006

Received by: (Signature)

Temp _____ °C Bottles Received: _____

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: _____ Time: _____

Received for lab by: (Signature)

Date: _____ Time: _____

Hold: _____ Condition: NCF / OK

**Polyenvironmental Corporation
Environmental Laboratory**

P.O. Box 837

Dothan, Alabama 36302

334-792-6348

10/06/2017

City Of Headland

9 Park Street

Headland,AL 36345

ATTN: Jason Singletary


Headland Southside Lagoon

Low Level Mercury performed by Environmental Science Corp.
ESC Sample Number: L929384-01 -02

2017-10-0065

Polyenvironmental Corporation

Respectfully Submitted,


Michael S. Davis, Lab Manager



ANALYTICAL REPORT

September 25, 2017



Poly Environmental Corp. Env. Lab

Sample Delivery Group: L929384
Samples Received: 08/15/2017
Project Number:
Description:

Report To: Mr. Steve Davis
PO Box 837
Dothan, AL 36303

Entire Report Reviewed By: *Janet Hensley*

Janet Hensley
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



TABLE OF CONTENTS

ONE LAB. NATIONWIDE.



Tc: Table of Contents	2
Cn: Case Narrative	3
Gl: Glossary of Terms	4
Al: Accreditations & Locations	5
Sc: Sample Chain of Custody	6



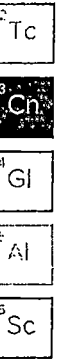


All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Janet Hensley
Technical Service Representative

Project Narrative

L929384 -01, -02 contains subout data that is included after the chain of custody.





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

SDG	Sample Delivery Group.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single locator laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey--NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio--VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{**} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



ACCOUNT:
Poly Environmental Corp. Env. Lab

PROJECT:

SDG:
L929384

DATE/TIME:
09/25/17 17:02

PAGE:
5 of 16

² Tc

³ Cn

⁴ Gl

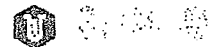
⁵ A

⁶ Sc



Laboratories LLC

a member of **The GEL Group** INC



PO Box 5912 Charleston SC 29417
2049 Savage Road Charleston SC 29407
P 843 554.8171
F 843 700.1176

gel.com

September 07, 2017

Ms. Janice Cozby
Environmental Science Corporation
12065 Lebanon Road
Mount Juliet, Tennessee 37122

Re: Low Level Mercury Analysis
Work Order: 430791

Dear Ms. Cozby:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 16, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4289.

Sincerely,

Julie Robinson
Project Manager

Purchase Order: S26251
Chain of Custody: WG1009770
Enclosures



GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis Report for

ENVL001 Environmental Science Corporation
Client SDG: 430791 GEL Work Order: 430791

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- B Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Julie Robinson.

Reviewed by _____

Julie Robinson

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: September 7, 2017

Company : Environmental Science Corporation
Address : 12065 Lebanon Road

Mount Juliet, Tennessee 37122
Contact: Ms. Janice Cozby
Project: Low Level Mercury Analysis

Client Sample ID:	L929384-01	Project:	ENVL00116
Sample ID:	430791001	Client ID:	ENVL001
Matrix:	Waste Water		
Collect Date:	14-AUG-17 08:45		
Receive Date:	16-AUG-17		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
EPA 1631 Low Level Mercury Analysis "As Received"												
Mercury	FB	2.02	0.200	0.500	ng/L		1	JXH5	09/06/17	2303	1693578	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 1631E	

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: September 7, 2017

Company : Environmental Science Corporation
Address : 12065 Lebanon Road

Contact: Mount Juliet, Tennessee 37122
Ms. Janice Cozby
Project: Low Level Mercury Analysis

Client Sample ID: L929384-02
Sample ID: 430791002
Matrix: BLANK
Collect Date: 14-AUG-17 00:00
Receive Date: 16-AUG-17
Collector: Client

Project: ENVL00116
Client ID: ENVL001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Mercury Analysis-CVAA												
EPA 1631 Low Level Mercury Analysis "As Received"												
Mercury	FB	0.605	0.200	0.500	ng/L		1	JXH5	09/06/17	2012	1693578	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 1631E	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: September 7, 2017

Page 1 of 2

Environmental Science Corporation

12065 Lebanon Road
Mount Juliet, Tennessee

Contact: Ms. Janice Cozby

Workorder: 430791

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Metals Analysis-Mercury											
Batch	1693578										
QC1203858489	LCS										
Mercury	5.00			4.19	ng/L		83.8	(77%-123%)	JXH5	09/06/17	19:59
QC1203858488	MB										
Mercury			U	<0.2	ng/L					09/06/17	19:52
QC1203858490	430292002	MS									
Mercury	100	26.0		144	ng/L		118	(71%-125%)		09/06/17	23:16
QC1203858491	430292002	MSD									
Mercury	100	26.0		139	ng/L	4.12	113	(0%-24%)		09/06/17	23:23

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- NI See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 430791

Page 2 of 2

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
-----------	-----	--------	------	----	-------	------	------	-------	-------	------	------

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Metals
Technical Case Narrative
Environmental Science Corporation (SUBL)
SDG #: 430791

Product: Mercury Analysis Using the PS Analytical Millennium Automated Mercury Analyzer
Analytical Method: EPA 1631E
Analytical Procedure: GL-MA-E-018 REV# 18
Analytical Batch: 1693578

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
430791001	L929384-01
430791002	L929384-02
1203858488	Method Blank (MB)CVAF
1203858489	Laboratory Control Sample (LCS)
1203858490	430292002(L927175-03 K1-002S) Matrix Spike (MS)
1203858491	430292002(L927175-03 K1-002SD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Dilutions

Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. Samples 1203858490 (L927175-03 K1-002MS) and 1203858491 (L927175-03 K1-002MSD) were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument.

Miscellaneous Information

Additional Comments

Mercury was present at quantifiable concentrations in field blanks and/or trip blanks that were received with these samples. The samples associated with these blanks did not contain mercury at concentrations more than 5x the amounts in the blanks, therefore, this data may not be reported or otherwise used for regulatory purposes. 430791001 (L929384-01) and 430791002 (L929384-02).

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Sub-Contract Chain of Custody

Environmental Science Corp
 12065 Lebanon Road
 Mt. Juliet, TN 37122
 (615) 773-9756 (615) 758-5859 fax

Sub-Contract Lab : GEL
 City / State : Charleston, SC
 Results Needed by : 09/1/17
 ESC Purchase Order # : S26251

430791

WORKGROUP	WG1009770
Date Created :	2017/08/15 12:54:08.00

Send Reports To : Janice Cozby jcozby@esclabsciences.com

SAMPLENO Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L929384-01 S22919099	WW	2017/08/14 08:45	Mercury by 1631	HG1631	1631E	
L929384-02 S22919100	WW	2017/08/14 00:00	Mercury by 1631	HG1631	1631E	<i>Trip Blank</i>

PRESERVED

Date: 8-16-17
 Time: 1016
 Analyst: BCS
 BrCl: 2577361-BrCl
 Volume: 5ml

Relinquished by *[Signature]* Date: 8-15-17
 Received by : *Byron Davis* Date: 8-16-17 0858
 Relinquished by _____ Date: _____
 Received by : _____ Date: _____



SAMPLE RECEIPT & REVIEW FORM

Client: <u>ENVL</u>		SDG/AR/COC/Work Order: <u>430791</u>		
Received By: <u>Bryan Davis</u>		Date Received: <u>8-16-17</u>		
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other		
		Tracking # <u>7474 0922 9386</u>		
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.		
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____		
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3		
Is package, COC, and/or Samples marked HAZ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:		
Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice Ice Packs Dry Ice <input checked="" type="checkbox"/> None Other: *all temperatures are recorded in Celsius TEMP: <u>24</u>°C
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>41502132</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ___ No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected: _____
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed):				

PM (or PMA) review: Initials JR Date 8-16-17 Page 1 of 1

List of current GEL Certifications as of 07 September 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-23
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Polyenvironmental Corporation
Environmental Laboratory

P.O. Box 837

Dothan, Alabama 36302

334-793-4700

12/27/2017

City Of Headland

9 Park Street

Headland,AL 36345

ATTN: Jason Singletary

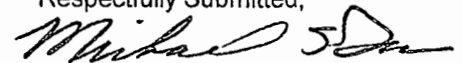
Headland Southside Lagoon

Mercury performed by ESC
ESC sample #L957440

2017-12-0267

Polyenvironmental Corporation

Respectfully Submitted,



Michael S. Davis, Lab Manager

December 22, 2017

Poly Environmental Corp. Env. Lab

Sample Delivery Group: L957440
Samples Received: 12/14/2017
Project Number:
Description: Headland

Report To: Mr. Steve Davis
PO Box 837
Dothan, AL 36303

Entire Report Reviewed By:



Linda Cashman
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



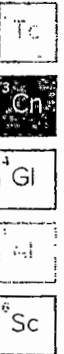
All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Linda Cashman
Technical Service Representative

Project Narrative

L957440 -01, -02 contains about data that is included after the chain of custody.





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

SDG	Sample Delivery Group.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Poly Environmental Corp. Env. Lab
 PO Box 837
 Dothan, AL 36303


Billing information:
 Mr. Steve Davis
 P. O. Box 837
 Dothan, AL 36303

Analysis / Container / Preservative									

Chain of Custody Page 1 of 2



12065 Enterprise Rd
 Maunsel Junction TN 37122
 Phone: 615 758 5858
 Phone: 800 257 5859
 Fax: 615 758 5859



Report to
 Mr. Steve Davis

Email to: sdavis@polyengineering.com;
 cmurphree@polyengineering.com

Project Description:

City/State Collected: **Headland AL**
67

Phone 334-793-4700
 Fax 334-677-9477

Client Project #

Lab Project #

Collected by (print):
 Kevin Kilpatrick

Site/Facility ID #

P.O. #

Collected by (signature):
 Kevin Kilpatrick

Rush? (Lab MUST be Notified)
 Same Day _____ 1-2 Day _____
 Next Day _____ 5 Day (Rad Only) _____
 Two Day _____ 10 Day (Rad Only) _____
 Three Day _____

Quote #

Immediately Packed on Ice: N Y

Date Results Needed

HG1631 250ml Cir-HCl

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cans
		WW				1 X
TRIP BLANK		WW				1 X
Mercury	Grab	WW		12/13/17	7:30	1

L# **L9 57440**
H198

Acctnum: POLYENV
 Template: T80103
 Prelogin: P618680
 TSR: D67 Janet Hensley
 RB: 9/14/17 ms

Shipped Via: **FedEX Ground**

* Matrix
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - Waste Water
 DW - Drinking Water
 OT - Other

Remarks:

pH _____ Temp _____
 Flow **478** Other _____

Samples returned via:
 UPS FedEx Courier

Tracking # **7474 0930 6778**

Sample Receipt Checklist:

DOC Seal Present/Intact:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
DOC Signed/Accurate:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Bottles arrive intact:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Correct bottles used:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Sufficient volume sent:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
If Applicable	
VQA Zero Headspace:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Preservation Correct/Checked:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

Relinquished by: (Signature)
 Date: 12/13/17 Time: 7:41

Received by (Signature):
 Date: 12/13/17 Time: 7:41

Received by (Signature):
 Date: 12/13/17 Time: 7:41

Trip Blank Received: Yes / No
 HCL / MeOH TBR

Temp: °C Bottles Received: **2**
 If preservation required by Login: Date/Time

Relinquished by: (Signature)
 Date: 12/14/17 Time: 8:45

Received by (Signature):
 Date: 12/14/17 Time: 8:45

Received for lab by: (Signature)
 Date: 12/14/17 Time: 8:45

Date: 12-14-17 Time: 8:45

Hold: _____ Condition: NCF 1/OK



Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

December 21, 2017

Benita Miller
ESC Lab Sciences
12065 Lebanon Rd
Mount Juliet, TN 37122

RE: Project: WG1053651 POLYENV
Pace Project No.: 92367206

Dear Benita Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on December 15, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Pace Analytical Services, LLC
9800 Kinsey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: WG1053651 POLYENV
Pace Project No.: 92367206

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



SAMPLE ANALYTE COUNT

Project: WG1053651 POLYENV
Pace Project No.: 92367206

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92367206001	TRIP BLANK	EPA 1631E	ANB	1	PASI-A
92367206002	MERCURY EFFLUENT 308164	EPA 1631E	ANB	1	PASI-A

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



ANALYTICAL RESULTS

Project: WG1053651 POLYENV
Pace Project No.: 92367206

Sample: TRIP BLANK	Lab ID: 92367206001	Collected: 12/13/17 07:30	Received: 12/15/17 10:20	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1631E Mercury,Low Level	Analytical Method: EPA 1631E Preparation Method: EPA 1631E							
Mercury	ND	ng/L	0.50	1	12/20/17 14:56	12/21/17 10:58	7439-97-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



ANALYTICAL RESULTS

Project: WG1053651 POLYENV
Pace Project No.: 92367206

Sample: MERCURY EFFLUENT Lab ID: 92367206002 Collected: 12/13/17 07:30 Received: 12/15/17 10:20 Matrix: Water
308164

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
1631E Mercury, Low Level Analytical Method: EPA 1631E Preparation Method: EPA 1631E								
Mercury	0.607	ng/L	0.50	1	12/20/17 14:56	12/21/17 11:06	7439-97-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: WG1053651 POLYENV
Pace Project No.: 92367206

QC Batch: 391823 Analysis Method: EPA 1631E
QC Batch Method: EPA 1631E Analysis Description: 1631E Mercury, Low Level
Associated Lab Samples: 92367206001, 92367206002

METHOD BLANK: 2173685 Matrix: Water
Associated Lab Samples: 92367206001, 92367206002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	12/21/17 10:12	

METHOD BLANK: 2173686 Matrix: Water
Associated Lab Samples: 92367206001, 92367206002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	12/21/17 11:59	

METHOD BLANK: 2173687 Matrix: Water
Associated Lab Samples: 92367206001, 92367206002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ng/L	ND	0.50	12/21/17 13:39	

LABORATORY CONTROL SAMPLE: 2173688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ng/L	5	4.60	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2173689 2173690

Parameter	Units	92366257002 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result					
Mercury	ng/L	ND	25	25	24.5	24.2	97	96	71-125	1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2173691 2173692

Parameter	Units	35363956001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result					
Mercury	ng/L	ND	25	25	23.6	24.1	93	95	71-125	2	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



QUALIFIERS

Project: WG1053651 POLYENV
Pace Project No.: 92367206

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.
A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

\ PASI-A Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



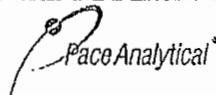
QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WG1053651 POLYENV
Pace Project No.: 92367206

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92367206001	TRIP BLANK	EPA 1631E	391823	EPA 1631E	391825
92367206002	MERCURY EFFLUENT 308164	EPA 1631E	391823	EPA 1631E	391825

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: July 25, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.03	Issuing Authority: Pace Quality Office

Laboratory receiving samples:-

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name:
Pace - EEC

Project #: **WO#: 92367206**

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____



Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: 12/15/17 A

Packing Material: Bubble Wrap Bubble Bags None Other
 Thermometer: IR Gun ID: N/A Type of Ice: Wet Blue None

Biological Tissue Frozen? Yes No N/A

Correction Factor: Cooler Temp Corrected (°C): N/A

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

		Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Sample Labels Match COC?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WJ</u>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____

Date/Time: _____

Comments/Sample Discrepancy: _____

Project Manager SCURF Review: [Signature]

Date: 12/13/17

Project Manager SRF Review: [Signature]

Date: 12/15/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DE/INR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)



Document Name:
Sample Condition Upon Receipt(SCUR)
Document No.:
F-CAR-CS-033-Rev.03

Document Revised: July 25, 2017
Page 2 of 2
Issuing Authority:
Pace Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project #

WO# : 92367206

PM: KRG

Due Date: 01/03/18

**Bottom half of box is to list number of bottles

CLIENT: 92-ESC LAB

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP3Z-250 mL Plastic ZN Acetate & NaOH (>9)	BP3C-250 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples						
Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Sub-Contract Chain of Custody

WO: WG1053651

92 367206

Batch Date/Time: 12/14/17 13:52
 Sub-Contract Lab: PACESANC
 Address: 2225 Riverside Dr
 City/State: Asheville, NC
 Contact: Kevin Herring @ pacelabs.com
 Received Date: 12/14/17
 Results Due Date: 01/02/18
 ESC Purchase Order #: 1957440
 Send Reports to: Benita Miller
 Email:
 Subout Team @ escsciences.com

Client Account: POLY:NV
 Proj. Name: Headland
 Proj. #: N/A
 Attention: Mr. Steve Davis
 Quote Amount: \$130.00
 Report Date: ___/___/___
 Invoice #:
 Invoice Amount:
 Did We Pay Shipping?:



12065 Lebanon Rd
 Mt. Juliet, TN 37122
 call (615)773-9756
 fax (615)758-5859

Sample Number Container ID	Sample ID	Matrix	State	Collect Date	Analysis Code	Description	Method	Sample Comments
1. I.957440-01 S23636292	TRIP BLANK	WW	AL	12/13/17 07:30	HG1631	Mercury by 1631	1631E	00A
2. I.957440-02 S23636291	MERCURY EFFLUENT 308164	WW	AL	12/13/17 07:30	HG1631	Mercury by 1631	1631E	00B

* - Container used for multiple Samples and/or Analyses

Relinquished by: BOM Date: 12/14/17
 Received by: J. Wilson/PCA Date: 12/15/17 (020)
 Relinquished by: _____ Date: _____
 Received by: _____ Date: _____



12065 LEBANON RD.
 MT. JULIET, TN 37122
 (800) 767-5859
 WWW.ENVSCI.COM

June 22, 2018

Mr. Steve Davis
 Poly Environmental Corp - Headland STP
 PO Box 837
 Dothan, AL 36303

Biomonitoring Results
 ESC Lab Sciences Identification #: L993780-01,-02,-03

Attached are the results for toxicity test performed: May 15-22, 2018

A summary of the findings is presented below:

	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>
Test Species	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>
EPA Method	EPA Method 1002.0	EPA Method 1000.0
Test Concentrations	100%	100%
Permit Limit (IWC)	100%	100%
Test Endpoint	AEC (Pass/Fail)	AEC (Pass/Fail)
Test Result	100% (PASS)	100% (PASS)
	successfully meets permit requirements for the period	successfully meets permit requirements for the period
Next Test Date	Week of August 12, 2018	
Comments	Poly Enterprise- Headland STP AL0027014	

If you have any questions or comments concerning the enclosed report, please do not hesitate to contact us.



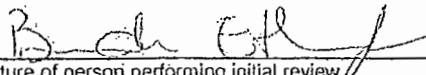
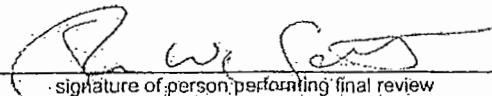
Aquatic Biology Lab
 (615) 758-5858 ext. 7549
 (615) 758-5858 ext. 7544

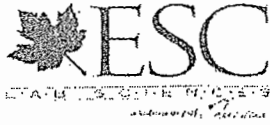


Acute or Chronic? Chronic
 Screen or Definitive? Screen
 Test Date: May 15-22, 2018
 Lab Identification #: L993780-01,-02,-03

TOXICITY TEST REPORT SHEET

- 1). Facility/Discharger Poly Environmental Corp - Headland STP
- 2). Contact Person Mr. Steve Davis
 phone (facility) 334.793.4700
 email 1 sdavis@polyengineering.com
 email 2 emurphree@polyengineering.com
- 3). Permit # or Project ID AL0027014
- 4). Report Address
 PO Box 837
 Dothan, AL 36303
- 5). Receiving Stream
- 6). Laboratory Name ESC Lab Sciences
- 7). Laboratory Contact (phone) Shain W. Schmitt, Sr. Aquatic Biologist
 615.773.9687
- 8). Outfall(s) Tested Final Effluent
- 9). Test Species
- | | |
|------------------------------|-------------------------------|
| #1 <i>Ceriodaphnia dubia</i> | #2 <i>Pimephales promelas</i> |
|------------------------------|-------------------------------|
- 10). Species Age
- | | |
|---------------------|------------------|
| #1 Neonates, <24-hr | #2 24-36 hrs old |
|---------------------|------------------|
- 11). Test Conditions (Static or Static-Renewal?)
- | | |
|-------------------|-------------------|
| #1 Static-Renewal | #2 Static-Renewal |
|-------------------|-------------------|
- 12). Dilution Water Type (synthetic, receiving stream) Moderately Hard SDW
- 13). Aeration? (Before/During Test) none
- 14). Dechlorination? none
- 15). Original Chlorine Level <0.2mg/L, <0.2mg/L, <0.2mg/L
- 16). Report prepared by Melissa Holwerda, Assistant Biologist

 signature of person performing initial review	6-26-18 date
Brandon Ethendge name (typed or printed)	Sr. Biologist title
 signature of person performing final review	7-2-18 date
Shain W. Schmitt name (typed or printed)	Sr. Aquatic Biologist title



Facility/Discharger: Poly Environmental Corp - Headland STP
 Lab Identification #: L993780-01,-02,-03
 Test Date: May 15-22, 2018

SAMPLING SUMMARY

Sample	Sample Type Grab or Composite	Volume Collected	Sample Collection		Flow Rate (at collection)	Sample Temperature (when received at lab)
			Begin (MM/DD/Time)	End (MM/DD/Time)		
1	Composite	3 Liters	5/13/2018 @ 10:00	5/14/2018 @ 10:00	0.14	2.4 deg C
2	Composite	3 Liters	5/15/2018 @ 10:00	5/16/2018 @ 10:00	0.15	2 deg C
3	Composite	4 Liters	5/17/2018 @ 09:00	5/18/2018 @ 09:00	2	1.3 deg C

Comments:

TEST PERFORMANCE

Species #1

Ceriodaphnia dubia (water flea)
 5/15/2018 @ 13:39 to 5/21/2018 @ 11:43

Species Age

<24 hrs old, within 8 hrs of the same age

Organism Source

ESC Lab Sciences, in-house cultures

Acclimation Procedure

cultured in Moderately Hard SDW at 25 deg C

Test Duration

3-Brood

Feeding Regime

0.15 mL YCT and 0.15 mL algal suspension, daily, upon renewal

Type of Test Chamber

polystyrene cup

Volume of Test Chamber

30 mL

Volume of Solution Used Per Test Chamber

20 mL

Number of Test Organisms Per Test Chamber

one (1)

Number of Replicates Per Treatment

ten (10)

Species #2

Pimephales promelas (fathead minnow)
 5/15/2018 @ 13:36 to 5/22/2018 @ 09:17

Species Age	Hatch Date	ESC Lot #
24-36 hrs old	5/14/2018	051418HD

Organism Source

Aquatic Bio Systems - Fort Collins, CO

Acclimation Procedure

acclimated in 20% DMW at 25 deg C for about 2 hrs

Test Duration

7-Day

Feeding Regime

0.15 mL - 0.2 mL newly hatched brine shrimp nauplii, twice daily

Type of Test Chamber

polypropylene beaker

Volume of Test Chamber

500 mL

Volume of Solution Used Per Test Chamber

250 mL

Number of Test Organisms Per Test Chamber

ten (10)

Number of Replicates Per Treatment

four (4)



Facility/Discharger: Poly Environmental Corp - Headland STP

Lab Identification #: L993780-01,-02,-03

Test Date: May 15-22, 2018

ADDITIONAL TOXICITY TEST INFORMATION

Copies of all bench sheets and statistical calculations and printouts obtained during the test are attached in the Appendix.

Methods/Instrumentation used in chemical analysis:

Dissolved Oxygen: YSI 5000 DO Meter/Probe (serial #01L0435)

pH: Beckman 390pH/Temp/mV/ISE Meter

pH/RDO/Conductivity: Thermo Scientific Orion VersaStar (serial #V 02105)

Water Bath: Lindberg/Blue, Model WB1140A-1 (serial #S01M-580360-SM)

Temperature: Thermometers calibrated to NIST certified thermometer

Alkalinity: Lachat

Hardness: Lachat

Total Residual Chlorine: Hach Pocket Colorimeter, Model #46770-00 (serial #971000112186)

Environmental Chambers: 25 degrees C + 1.0 degree - Thermo-Kool

Environmental Chambers (for Colorado tests): 20 degrees C \pm 1.0 degree - Thermo Scientific Model 3759

Light Quality: Ambient Lab Illumination

Light Intensity: 50-100 ft-c - VWR Traceable Dual-Range Light Meter- Model 62344-944 (S/N 157086819)

Photoperiod: 16 hours light, 8 hours dark

Drying: Overnight at greater than 60 degrees Celsius in a Fisher Scientific Isotemp Oven, Model 655F

Mean Dry Weight: Determined using Mettler Toledo Balance, AT261 Delta Range

Reference Weights (Set #1): Class 1, TREOMNER, Inc., serial number 85035

Reference Weights (Set #2): Class 1, TREOMNER, Inc., serial number 67812

EPA Acute Manual Edition and Date: EPA-821-02-012 October 2002, Fifth Edition

EPA Chronic Manual Edition and Date: EPA-821-R-02-013 October 2002, Fourth Edition

This method is performed only by Assistant Biologists, Biologists, and Senior Biologists that have experience with aquatic toxicity testing. Laboratory Technicians, Chemists, and any other laboratory personnel that are not experienced with toxicity testing will not handle test organisms during a toxicity evaluation. Lab Techs, Chemists, and others may assist (under supervision) with the gathering of data during the evaluation (pH, DO, conductivity, alkalinity, hardness, etc.), but will not be allowed to do any work with the test organisms themselves. The following analysts have met Technical Training Qualifications and their initials (in parenthesis) can be found on the bench sheets in this report: Brandon Etheridge (BE); Shain W. Schmitt (SWS); Stacy Kennedy (SK); Adam Macomber (AM); Amy Eggleston (AME); Melissa Holwarda (MH); Cody Medley (CM); Kristen Rodgers (KR);

Clarissa Moore (CGM); Nadiar Yakob (NY); Keith Hargis (KH); Jon Berry (JB); Paige Brazzell (PB)

Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from EPA Methodology that were necessary for these tests as well as any sample manipulations which were performed, such as aeration, dechlorination with sodium thiosulfate (etc) and the justification for such manipulations or deviations. Attach additional pages as needed.

*Replicate H (Control) was removed as an outlier due to inconsistent responses unrepresentative of the general trend of the data. The count for Total Young was divided by 9 instead of 10 to arrive at the mean (per EPA methods.)



Facility/Discharger: Poly Environmental Corp - Headland STP
 Lab Identification #: L993780-01,-02,-03
 Test Date: May 15-22, 2018

Toxicity Test Results

Results of a Ceriodaphnia dubia 3-Brood, Survival & Reproduction Test
 (Genus) (Species) (Type/Duration)

Conducted 5/15/2018 to 5/21/2018 Using Effluent from Outfall:
Final Effluent

Test Solution	Percent Surviving (time intervals used - days)								# of Young	
	0	1	2	3	4	5	6	7	Total	Mean
Control	100	100	100	100	100	100	88.9*		303	33.7*
100% Effluent	100	100	100	100	100	100	100		383	38.3

*Replicate H (Control) was removed as an outlier due to inconsistent responses unrepresentative of the general trend of the data. The count for Total Young was divided by 9 instead of 10 to arrive at the mean (per EPA methods.)

Permit Limit:
(IWC) 100%

NOEC Value:
(AEC) 100% survival 100% reproduction

Coefficient of
Variance
(CV%): 37.9%

Confidence Limits
Upper Limit:
Lower Limit:

Statistical methods used to determine NOEC (if applicable):

Shapiro-Wilk's Test, F-Test, Dunnett's Test, Homoscedastic t Test

Percent
Minimum
Significant
Difference: 22.8%

$$PMSD = \frac{\text{Minimum Significant Difference} \times 100}{\text{Control Mean (reproduction)}}$$

The PMSD describes the variability that occurred within the test. If the PMSD value for a given test is less than or equal to the 90th PMSD (47 for *Ceriodaphnia*), the test's variability measure is within the normal range expected for the test.

INTERPRETATION OF RESULTS

Ceriodaphnia dubia (water flea) - No toxicity was demonstrated. Using Shapiro-Wilk's Test, F-Test, Dunnett's Test, and Homoscedastic t Test, it was determined that the AEC (Adverse Effect Concentration) for survival and reproduction is equal to 100% effluent. There was no statistically significant difference between the effluent concentration and the Control. Permittee successfully meets permit requirements for the period (PASS test).



Toxicity Test Results

Results of a Pimephales (Genus) promelas (Species) 7-day, Survival & Growth Test (Type/Duration)
 Conducted 5/15/2018 to 5/22/2018 Using Effluent from Outfall: Final Effluent

Test Solution	Percent Surviving (time intervals used - days)								Dry Weight (mg)	
	0	1	2	3	4	5	6	7	Total	Mean
Control	100	97.5	97.5	97.5	97.5	97.5	97.5	97.5	2.1070	0.5267
100% Effluent	100	100	100	100	97.5	97.5	97.5	92.5	1.9960	0.4990

Permit Limit: (IWC) 100% NOEC Value: (AEC) 100% survival 100% growth

Coefficient of Variance (CV%): 14.4% Confidence Limits Upper Limit: Lower Limit: Confidence Limits Upper Limit: Lower Limit:

Statistical methods used to determine NOEC (if applicable):

Shapiro-Wilk's Test, Dunnett's Test, F-Test, Homoscedastic t Test

Percent Minimum Significant Difference: 17.9%

$$PMSD = \frac{\text{Minimum Significant Difference} \times 100}{\text{Control Mean (growth)}}$$

The PMSD describes the variability that occurred within the test. If the PMSD value for a given test is less than or equal to the 90th PMSD (30 for fathead minnow), the test's variability measure is within the normal range expected for the test.

INTERPRETATION OF RESULTS

Pimephales promelas (fathead minnow) - No toxicity was demonstrated. Using Shapiro-Wilk's Test, F-Test, Dunnett's Test, and Homoscedastic t Test, it was determined that the AEC (Adverse Effect Concentration) for survival and growth is equal to 100% effluent. There was no statistically significant difference between the effluent concentration and the Control. Permittee successfully meets permit requirements for the period (PASS test).



Facility/Discharger: Poly Environmental Corp - Headland STP
Lab Identification #: L993780-01,-02,-03
Test Date: May 15-22, 2018

APPENDIX

4. SAMPLE COLLECTION:

Split samples: N/A Yes _____ (explain)

Samples Collected as Specified in the NPDES Permit: Yes No (explain) _____

Receiving Water: _____ Design Flow: _____ (MGD)

Sample ID	Sample(s) Collected				Arrival Temp (°C)	Used in Test(s)	
	MM/DD/YY	HH:MM	- MM/DD/YY	HH:MM		MM/DD/YY	- MM/DD/YY
L993780-01	5/13/2018	10:00	5/14/2018	10:00	2.4	5/15/2018	5/16/2018
L993780-02	5/15/2018	10:00	5/16/2018	10:00	2	5/17/2018	5/18/2018
L993780-03	5/17/2018	0:00	5/18/2018	9:00	1.3	5/19/2018	5/21/2018

5. CONTROL / DILUTION WATER:

Type	Prepared MM/DD/YY	Begin Use MM/DD/YY	Initial Water Chemistries				
			Hardness	Alkalinity	pH	Spec. Con.	@ °C
MHSDW	F 5-14	5/15/2018	64	48	8.0	284	25
MHSDW	F 5-15	5/17/2018	*	*	8.0	282	25
MHSDW	F 5-16	5/18/2018	67	54	8.1	277	25
MHSDW	F 5-18	5/19/2018	67	57	8.1	266	25
MHSDW	F 5-19	5/20/2018	67	50	7.6	*	25

*Reading missed due to conductivity meter not working properly.

*Alk/Hard not submitted for analysis due to analyst error.

6. TOXICITY TEST INFORMATION:

Test Species	Organism Age	Organism Source	Test Solution Concentrations (%)			
<i>Ceriodaphnia dubia</i>	< 24 hours old	in-house cultures	Control	100		
<i>Pimephales promelas</i>	< 36 hours old	Aquatic BioSystems, Inc.	Control	100		

Test Species	Test Vessel Type	Vessel Volume (mL)	Solution Volume (mL)	Org. / Test Vessel	Replicates per Conc.
<i>Ceriodaphnia dubia</i>	polystyrene cups	30 mL	20 mL	1	10
<i>Pimephales promelas</i>	polypropylene cups	500 mL	250 mL	10	4

Test Species	Temperature Range	D.O. Range (mg/L)	pH Range (mg/L)	Light Intensity Average (ft-c)
<i>Ceriodaphnia dubia</i>	24.0 - 25.7	7.1 - 9.4	6.9 - 8.0	64.36
<i>Pimephales promelas</i>	24.0 - 26.0	7.1 - 9.4	6.9 - 8.0	64.36

7. FEEDING:

Not Fed: _____ Fed Daily: Fed Irregular: _____ (explain in comments below)

Brine Shrimp: Fed 0.15 - 0.2 mL suspension of newly hatched larvae 2 times daily.

YCT: Fed 0.15 mL suspension containing 1720 mg/L TSS daily.

Algae: Fed 0.15 mL suspension containing 3.0 X 10⁷ algal cells/mL daily.

COMMENTS:

8. REFERENCE TOXICANT TESTS:

Toxicant: potassium chloride (KCl) Source: VWR International LLC VWR Lot#: 0256C509
 ESC Lot #: 35192

Solution concentration unit: _____ mg/L g/L _____ % _____ Other (specify)

Test Organism	Test Date MM/DD - MM/DD	Control Water	Reference: Test Solution Concentrations (control to highest concentration)					
			Control	0.05	0.1	0.2	0.4	0.8
<i>Ceriodaphnia dubia</i>	05/01-05/07	Moderately Hard SDW	Control	0.05	0.1	0.2	0.4	0.8
<i>Pimephales promelas</i>	05/01-05/08	Moderately Hard SDW	Control	0.1875	0.375	0.75	1.5	3.0

Test Organism	Results IC25	.95% Confidence Interval	Upper and Lower CUSUM Chart Control Limit (this test)	Number (N)
<i>Ceriodaphnia dubia</i>	0.2879	0.2624-0.3064		
<i>Pimephales promelas</i>	0.4335	0.2854-0.5182		

9. TEST CONDITION VARIABILITY:

9.A. Deviations from standard test conditions:

<< no manipulations or modifications to report >>

9.B. Test solution manipulations or test modifications:

<< no manipulations or modifications to report >>

10. REQUIRED REPORT ATTACHMENTS:

Attach copies of Chain-of-Custody Forms, Reference Toxicant Tests, and Raw Data (bench sheets) pertaining to physical, chemical, and biological measurements for all tests. Include suspended, interrupted, or discontinued toxicity test data.

COMMENTS:

11.A. ACUTE SCREENING TOXICITY TEST RESULTS (freshwater):

TEST ORGANISM: _____

ACUTE TOXICITY INDICATED: _____ YES _____ NO

NO ACUTE STATISTICAL ANALYSIS NECESSARY: _____

SOLUTION CONC (%)	CONTROL				
MORTALITY (%)					

not

PERMITTED MORTALITY RATE (%): _____

Normally Distributed: YES _____ NO

Test Statistic: _____ Critical Value: _____ (Parametric)

Equal Variance: _____ Unequal Variance: _____

F Statistic: _____ Critical F: _____

t-Test Statistic: _____ t-Test Critical Value: _____

Sample Rank Sum: _____ # Repts: _____ Critical Rank Sum: _____ (Non-Parametric)

COMMENTS:

applicable

TEST ORGANISM: _____

ACUTE TOXICITY INDICATED: _____ YES _____ NO

NO ACUTE STATISTICAL ANALYSIS NECESSARY: _____

SOLUTION CONC (%)	CONTROL				
MORTALITY (%)					

not

PERMITTED MORTALITY RATE (%): _____

Normally Distributed: YES _____ NO

Test Statistic: _____ Critical Value: _____ (Parametric)

Equal Variance: _____ Unequal Variance: _____

F Statistic: _____ Critical F: _____

t-Test Statistic: _____ t-Test Critical Value: _____

Sample Rank Sum: _____ # Repts: _____ Critical Rank Sum: _____ (Non-Parametric)

COMMENTS:

applicable

11.C. CHRONIC SCREENING TOXICITY TEST RESULTS (freshwater):

TEST ORGANISM: Geriodaphnia dubia

Were neonates used to begin the test within 8 hours of the same age? yes
 Did 60% of the CONTROL females produce their third brood? yes

SURVIVAL

CHRONIC TOXICITY INDICATED: YES _____ NO X

NO SURVIVAL STATISTICAL ANALYSIS NECESSARY: _____

CONTROL (%)	24 h	100%	48 h	100%	END	88.9%	EFFLUENT (%)	24 h	100%	48 h	100%	END	100%
Fisher's Exact Test:	A =		B =				a =		b =				

REPRODUCTION (Average Neonates/Female)

CHRONIC TOXICITY INDICATED: YES _____ NO X

CONTROL: 33.7 EFFLUENT: 38.3

NO REPRODUCTION STATISTICAL ANALYSIS NECESSARY: _____

Normally Distributed:	YES _____	NO	<u>X</u>
Test Statistic:	<u>0.87293</u>	Critical Value:	<u>0.901</u> (Parametric)
Equal Variance:	_____	Unequal Variance:	<u>X</u>
F Statistic:	<u>5.49605</u>	Critical F:	<u>4.10196</u>
t-Test Statistic:	_____	t-Test Critical Value:	_____
Sample Rank Sum:	<u>104.5</u>	# Reps:	<u>10</u>
		Critical Rank Sum:	<u>79.00</u> (Non-Parametric)

COMMENTS: **PASS test (AEC = 100%)**

TEST ORGANISM: Pimephales promelas

SURVIVAL

CHRONIC TOXICITY INDICATED: YES _____ NO X

NO SURVIVAL STATISTICAL ANALYSIS NECESSARY: _____

CONTROL (%)	24 h	97.5%	48 h	97.5%	END	97.5%	EFFLUENT (%)	24 h	100%	48 h	100%	END	92.5%
Normally Distributed:	YES	<u>X</u>	NO	_____									
Test Statistic:	<u>0.89479</u>	Critical Value:	<u>0.818</u> (Parametric)										
Equal Variance:	<u>X</u>	Unequal Variance:	_____										
F Statistic:	<u>3.25236</u>	Critical F:	<u>15.4391</u>										
t-Test Statistic:	<u>0.907</u>	t-Test Critical Value:	<u>1.943</u>										
Sample Rank Sum:	_____	# Reps:	<u>4</u>										
		Critical Rank Sum:	_____ (Non-Parametric)										

GROWTH (Mean Dry Weight - mg)

CHRONIC TOXICITY INDICATED: YES _____ NO X

CONTROL: 0.5267 EFFLUENT: 0.499

NO GROWTH STATISTICAL ANALYSIS NECESSARY: _____

Normally Distributed:	YES	<u>X</u>	NO	_____
Test Statistic:	<u>0.88323</u>	Critical Value:	<u>0.818</u> (Parametric)	
Equal Variance:	<u>X</u>	Unequal Variance:	_____	
F Statistic:	<u>1.56077</u>	Critical F:	<u>15.4391</u>	
t-Test Statistic:	<u>0.571</u>	t-Test Critical Value:	<u>1.943</u>	
Sample Rank Sum:	_____	# Reps:	<u>4</u>	
		Critical Rank Sum:	_____ (Non-Parametric)	

COMMENTS: **PASS test (AEC = 100%)**

Poly Env. - Headland STP

NPDES #: AL0027014

Test Date: May 15-22, 2018

Login #: L993780-01,-02,-03

Tue 5/15/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.8	288.4	8.4	13:30:50	CN
Dup. Control	7.9	284.8	8.2	13:31:19	CN
100	7.3	176.4	8.3	13:32:06	CN
Dup. 100	7.3	174	8.5	13:32:28	CN

Comments:

Control # 4 All data is entered in real time, data sheets are electronically tracked, and password protected.

Wed 5/16/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.9	285.3	8.2	13:19:55	PB
100	7.8	281.6	8.3	13:20:19	PB

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	Initials	pH	DO	Time	Analyst
Control	8	8.1	12:55:43	PB	Control	7.9	8.2	8:42:25	PB
Dup. Control	8	8	12:56:02	PB	Dup. Control	7.9	8	8:42:44	PB
100	8	8.1	12:56:29	PB	100	7.8	7.9	8:43:28	PB
Dup. 100	8	8.1	12:56:37	PB	Dup. 100	7.8	7.8	8:43:47	PB

Thu 5/17/18

Initials	pH	Con.	DO	Time	Analyst
Control	8	273.5	7.7	14:51:56	PB
100	7.8	250.7	8	14:52:28	PB

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	Initials	pH	DO	Time	Analyst
Control	8	7.9	15:21:24	PB	Control	7.7	7.6	8:36:57	PB
100	8.2	8.1	15:21:48	PB	100	7.8	7.2	8:37:43	PB

Fri 5/18/18

Initials	pH	Con.	DO	Time	Analyst
Control	6.9	444	8.1	11:08:12	CN
100	7.6	378	8	11:09:14	CN

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	Initials	pH	DO	Time	Analyst
Control	7.9	8	11:31:15	CN	Control	7.7	7.5	9:14:30	CN
100	8.2	7.8	11:31:41	CN	100	7.8	7.1	9:14:59	CN

Sat 5/19/18

Initials	pH	Con.	DO	Time	Analyst
Control	8	266.2	8.3	12:14:28	PB
100	7.6	345	8.3	12:14:57	PB

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	Initials	pH	DO	Time	Analyst
Control	8.1	8.1	12:09:55	PB	Control	7.8	7.4	8:32:28	PB
100	8.4	8.2	12:10:22	PB	100	8	7	8:32:58	PB

Sun 5/20/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.8		7.2	11:32	JB
100	7.6		7.1	11:34	JB

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	Initials	pH	DO	Time	Analyst
Control	7.5	6.9	12:52	JB	Control	8.2	7.3	11:07	JB
100	8.1	7	12:53	JB	100	8.1	7.3	11:03	JB

* Readings missed. Analyst error. BE 5/24/18

Mon 5/21/18

Initials	pH	Con.	DO	Time	Analyst
Control	8	277.9	8.2	10:47	CN
100	7.4	170.7	9.4	10:48	CN

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	Initials	pH	DO	Time	Analyst
Control	8.1	8.9	13:02	CN	Control	7.9	8.2	9:20	CN
100	8.1	8.9	13:04	CN	100	8	8	9:21	CN

Tue 5/22/18

Initials	pH	Con.	DO	Time	Analyst
Control					
100					

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	Initials	pH	DO	Time	Analyst
Control					Control	7.8	7.8	9:07	CN
100					100	7.8	7.8	9:08	CN

Initials	pH		Con.		DO	
	range	mean	range	mean	range	mean
Control	6.9-8	7.8	266.2-444	302	7.2-8.4	8.0
100	7.3-7.8	7.6	170.7-378	254	7.1-9.1	8.2

Initials	<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>			
	range	mean	range	mean	range	mean	range	mean
Control	7.5-8.1	7.9	6.9-8.9	8.0	7.7-8.2	7.9	7.3-8.2	7.8
100	8-8.4	8.1	7-8.9	8.0	7.8-8.1	7.9	7-8	7.5

Poly Env. - Headland STP

NPDES # AL0027014
Control #4

Test Dates: May 15-22, 2018

L#: L993780-01,-02,-03

Lot of Control		Alkalinity (mg/L)	Hardness (mg/L)	
L994016-03	Tue 5/15/18	48	64	F 5-14
	Thu 5/17/18	*	*	F 5-15
L995511-02	Sat 5/19/18	57	67	F 5-18

Alkalinity (mg/L)	
range: 48-57	mean: 52.5
Hardness (mg/L)	
range: 64-67	mean: 65.5

100% Effluent

		Alkalinity (mg/L)	Hardness (mg/L)
L993780-01	Tue 5/15/18	42	51
L993780-02	Thu 5/17/18	89	103
L993780-03	Sat 5/19/18	44	56

Alkalinity (mg/L)	
range: 42-89	mean: 58.3
Hardness (mg/L)	
range: 51-103	mean: 70.0

	Total Res. Cl ₂ (mg/L)	Analyst
Tue 5/15/18	<0.2	JB
Thu 5/17/18	<0.2	PB
Sat 5/19/18	<0.2	PB

*Alk/Hard readings missed. Analyst error. CN 5-29-18

Record of Daily *Pimephales promelas* (fathead minnow) Feedings

Minnows in chronic WET tests are fed 0.15 - 0.2 mL (per test vessel) newly hatched brine shrimp nauplii, twice daily (morning & afternoon). At test initiation, minnows are fed only once (in the afternoon). On the final day of the test, minnows are not fed.

Morning Feedings:

	Tue 5/15/18	Wed 5/16/18	Thu 5/17/18	Fri 5/18/18	Sat 5/19/18	Sun 5/20/18	Mon 5/21/18	Tue 5/22/18
Time:	test initiation	7:45	7:45	8:00	7:10	7:45	7:50	test ends
Analyst:	not applicable	NY	NY	KR	MH	NY	NY	not fed

Afternoon Feedings:

	Tue 5/15/18	Wed 5/16/18	Thu 5/17/18	Fri 5/18/18	Sat 5/19/18	Sun 5/20/18	Mon 5/21/18	Tue 5/22/18
Time:	16:30	16:55	16:30	16:28	13:50	14:50	16:45	test ends
Analyst:	JB	JB	NY	KR	KR	NY	CM	not fed

Light Intensity (ft-c) of Test Incubator

	Tue 5/15/18	Wed 5/16/18	Thu 5/17/18	Fri 5/18/18	Sat 5/19/18	Sun 5/20/18	Mon 5/21/18	Tue 5/22/18
Top	65.9	66.7	63.9	69.8	71.6	64.5	65.8	68.3
Middle	63.8	63.8	62.8	67.6	68.2	61.8	64.9	65.5
Bottom	60.7	57.6	57.2	64.5	66.5	60.2	59.6	63.4
Average	63.466667	62.7	61.3	67.3	68.76667	62.16667	63.43333	65.733333

Light Intensity (ft-c) - average of all days in test period 64.35833333

Poly Env. - Headland STP

Poly Env. - Headland STP

NPDES #: AL0027014

Test Date: May 15-22, 2018

ESC Lab #: L993780-01,-02,-03

Thermometer Serial #: 18050064

Record of Daily Temperatures (°C)

Pimephales promelas (fathead minnow) - measurement taken in test chambers

	Tue 5/15/18	Wed 5/16/18	Thu 5/17/18	Fri 5/18/18	Sat 5/19/18	Sun 5/20/18	Mon 5/21/18	Tue 5/22/18
Analyst: (initial)	NY	JB	NY	KH	KH	NY	NY	
Temp of Sample Container	25.5°C	24.6°C	25.6°C	25.9°C	24.7°C	25.4°C	25.8°C	
Control (initial)	24.4°C	24.0°C	24.5°C	26.0°C	25.6°C	25.2°C	25.7°C	
100	25.2°C	24.5°C	25.4°C	25.9°C	24.7°C	25.4°C	25.8°C	
	(final)	(final)	(final)	(final)	(final)	(final)	(final)	(final)
Analyst:	NY	NY	KR	KR	NY	NY	NY	
Control	24.2°C	24.5°C	24.7°C	24.4°C	24.6°C	24.6°C	24.6°C	
100	24.4°C	24.6°C	24.7°C	24.5°C	24.5°C	24.3°C	24.5°C	

Ceriodaphnia dubia (water flea) - measurement taken in surrogate cup located on each tray

	Tue 5/15/18	Wed 5/16/18	Thu 5/17/18	Fri 5/18/18	Sat 5/19/18	Sun 5/20/18	Mon 5/21/18	Tue 5/22/18
Analyst: (initial)	NY	JB	NY	KH	KH	NY		
Temp of Sample Container	24.5°C	24.6°C	25.6°C	25.9°C	24.7°C	25.3°C		
Control (initial)	25.2°C	24.0°C	24.5°C	25.5°C	25.7°C	25.4°C		
100	25.5°C	24.5°C	25.2°C	25.7°C	24.4°C	25.5°C		
	(final)	(final)	(final)	(final)	(final)	(final)	(final)	(final)
Analyst:	NY	NY	KR	KR	NY	NY		
Control	24.8°C	24.6	24.6°C	24.3°C	24.6°C	24.3°C		
100	24.8°C	24.8°C	24.4°C	24.3°C	24.8°C	24.5°C		

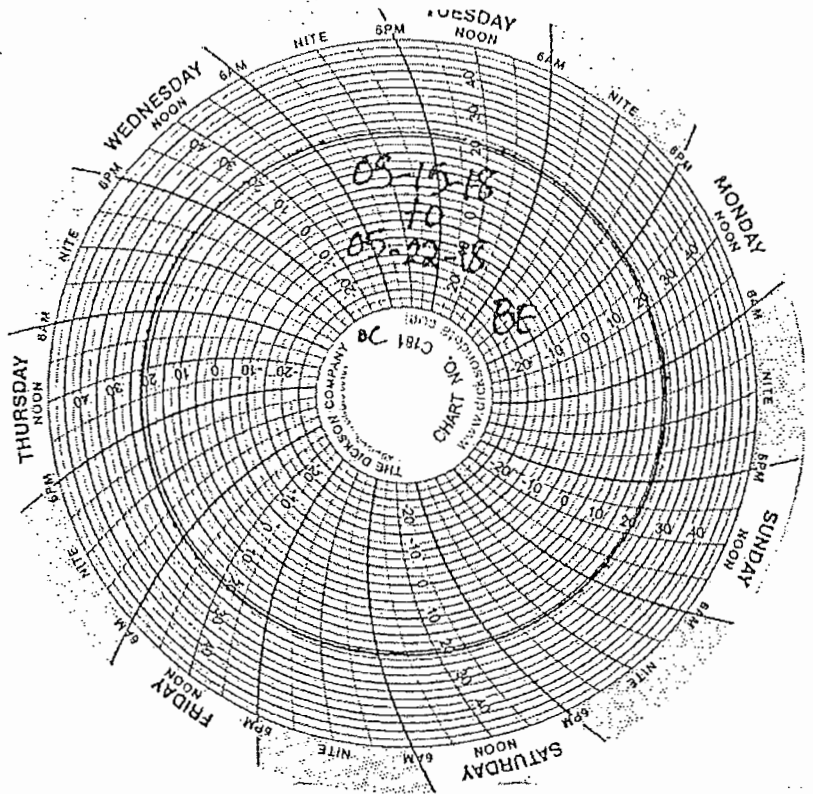
Poly Env. - Headland STP

Chart Devices Used in
Thermo-Kool Walk-in Incubator.

Dickson (small chart)

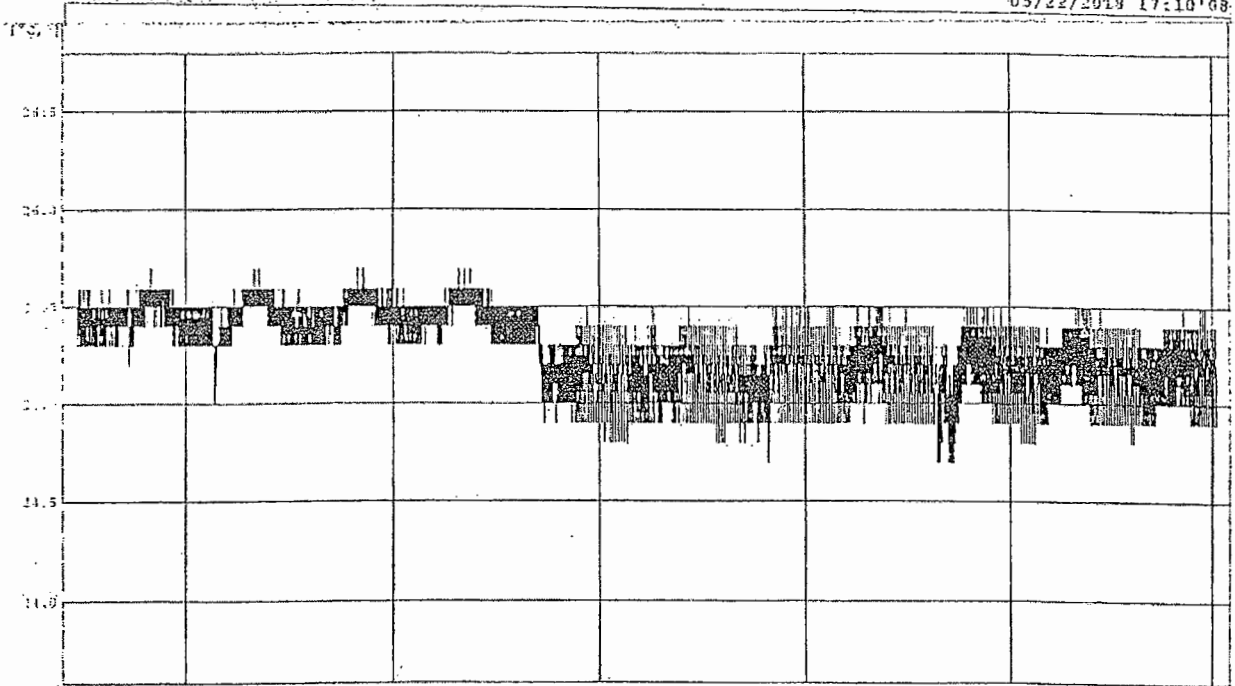
~~Thermo-Kool (large chart)~~

Week of 5-15-18
to 5-22-18 EE



Thermo Graph for Windows

05/22/2018 17:10:08



ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.7	25.3	°C
2	Ch2	2min.	8000	-----	-----	-----	25.7	24.7	25.3	°C

Cur.A Date : 05/10/2018 19:21'52
 Cur.B Date : 05/22/2018 4:24'09
 Diff. A-B : 11 09:02'17.000

Data Range 05/10/2018 19:21'52-05/22/2018 4:24'09
 Calc.Range 05/10/2018 22:33'50-05/22/2018 1:12'11

NOTATIONS USED BY ANALYSTS DURING TOXICITY EVALUATIONS

Ceriodaphnia dubia (water flea)

- # numbers on the Reproduction bench sheets (chronic) indicate the number of live young produced
- @ if number is circled, this indicates movement of daphnid has become impaired either by actual algal growth on the organisms, or has become entrapped in substances found in the effluent sample, or has been covered in stalked cilia
- ME (molted embryo) often a stressed or poor condition female will abort all or some of a brood in response to a toxin, insufficient nutrition, or just an inability to sustain a certain level of reproduction
- P (pale) this is a noticeable reduction in coloration compared to that which is normal for the individual's age
- SS (small size) this observation is made in comparison to other individuals of the same brood or age group and generally represents a difference of at least 2X size difference
- ES (erratic swimming) this represents a locomotor behavior typified by unsustained swimming with the daphnid periodically "resting" on the bottom of the test vessel; this condition is often observed prior to a daphnid becoming totally immobile
- I (immotility) this denotes a total lack of motility; daphnid is on the bottom of the test vessel and is confirmed as living; daphnids are frequently dead within a short time
- LIT (lost in transfer) organism was lost during transfer process; stats are adjusted to represent this dilution as having one less organism
- NL (not loaded) organism was not loaded at test initiation; stats are adjusted to represent this dilution having one less organism
- NT (not transferred) organism was not present at the time of the next transfer; stats are adjusted to represent this dilution having one less organism loaded at the initiation of testing
- X (dead) dead daphnid is on bottom of test vessel and is confirmed dead by observation of no appendage movement and no visible heartbeat

Pimephales promelas (fathead minnow)

- # numbers indicate the number of live organisms remaining
- BS (bent spine) fish appear to have a curved spine
- LR (loss of reflex) fish are alive, but slow to react to gentle prodding
- NL (not loaded) organism was not loaded at test initiation; stats are adjusted to represent this dilution having one less organism
- TS (top swimmers) fish appear to congregate only at the surface of the test solution (sometimes attributed to low dissolved oxygen levels)
- SS (small size) this observation is made in comparison to other individuals of the same age group and generally represents a difference of at least 2X size difference

L#: L993780-01,-02,-03

Date(s) and Time(s) of Neonate Harvest: From 16:00 on 5/14/2018 to 23:28 on 5/14/2018

Neonates were Harvested from the Following Tray(s):	050818AD2	050818AD2	050818AD2	050818AD1	050818AD1	051418X2A	051418X2A	051418X2A	051418X2A	051418X2A	Template Name:
Neonates were Harvested from the Following Cups:	C1	C3	J7	J6	J7	E1	E4	E7	G6	J1	BETA

Control Water
Carboy Used

Description of Sample Being Analyzed Below:				CONTROL 4 Poly Env. - Headland STP											AL0027014	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 1	B: 2	C: 5	D: 3	E: 6	F: 4	G: 1	H: 7	I: 2	J: 5			
F 5-14	Tue 5/15/18	13:39	NY	initiation	0	0	0	0	0	0	0	0	0	0	0	10
F 5-14	Wed 5/16/18	11:03	KH	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
F 5-15	Thu 5/17/18	14:02	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10
F 5-16	Fri 5/18/18	10:50	SK	72 hrs	0	7	0	0	0	0	0	0	0	0	7	10
F 5-18	Sat 5/19/18	11:03	MH	96 hrs	7	0	5	5	5	6	4	[5]	7	5	44	10
F 5-19	Sun 5/20/18	11:05	CM	120 hrs	13	16	11	9	16	7	12	[7]	7	12	103	10
	Mon 5/21/18	11:43	NY	144 hrs	25	19	23	0 X	24	0	25	0	12	21	149	9
	Tue 5/22/18			168 hrs											0	
	Wed 5/23/18			192 hrs											0	
Total # of Young Produced:					45	42	39	14	45	13	41	0	26	38	Total Offspring at Renewal	Total Young Produced
															303	303

Test Acceptability Criteria:	Survival ≥ 80%?	≥ 15 neonates/female?	≥ 60% 3rd brood?	Control Valid?
	YES NO	YES NO	YES NO	YES NO
	X	X	X	X

Description of Sample Being Analyzed Below:				100 Poly Env. - Headland STP											AL0027014	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 3	B: 6	C: 4	D: 2	E: 3	F: 1	G: 5	H: 2	I: 7	J: 4			
	Tue 5/15/18	13:39	NY	initiation	0	0	0	0	0	0	0	0	0	0	0	10
	Wed 5/16/18	11:07	KH	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Thu 5/17/18	14:10	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Fri 5/18/18	10:53	SK	72 hrs	3	0	0	7	5	0	3	0	5	0	23	10
	Sat 5/19/18	11:06	MH	96 hrs	0	6	5	0	0	6	0	4	0	6	27	10
	Sun 5/20/18	11:09	CM	120 hrs	16	13	17	11	13	11	13	13	12	12	131	10
	Mon 5/21/18	11:47	NY	144 hrs	17	21	19	24	25	25	16	9	24	22	202	10
	Tue 5/22/18			168 hrs											0	
	Wed 5/23/18			192 hrs											0	
Total # of Young Produced:					36	40	41	42	43	42	32	26	41	40	Total Offspring at Renewal	Total Young Produced
															383	383

Comments:

[] Replicate H (Control) was removed as an outlier due to inconsistent responses unrepresentative of the general trend. MH 5-23-18

18 of 62

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

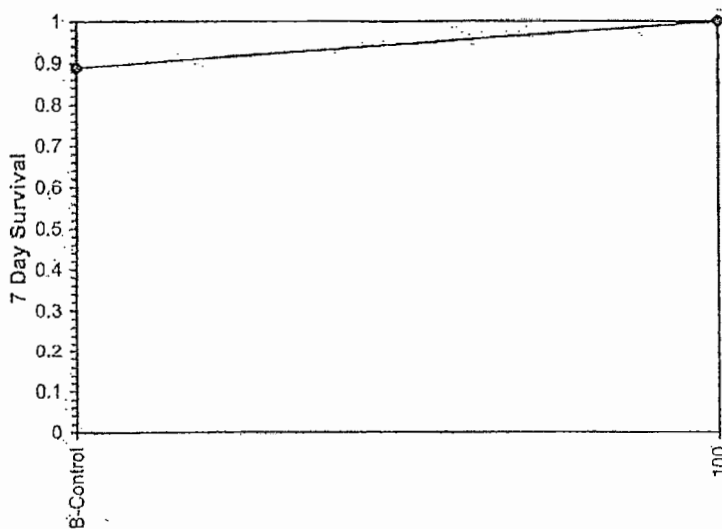
Start Date: 5/15/2018	Test ID: AL0027014	Sample ID: L993780-01,-02,-03
End Date: 5/21/2018	Lab ID: ESC Lab Sciences	Sample Type: EFF1-POTW
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Poly Env. - Headland STP		

Conc-%	1	2	3	4	5	6	7	8	9	10
B-Control	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp.	Not Resp.	Total	N	Fisher's Exact P	1-Tailed Critical
B-Control	0.8889	1.0000	1	8	9	9		
100	1.0000	1.1250	0	10	10	10	0.4737	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs B-Control				

Dose-Response Plot



Ceriodaphnia Survival and Reproduction Test-Reproduction

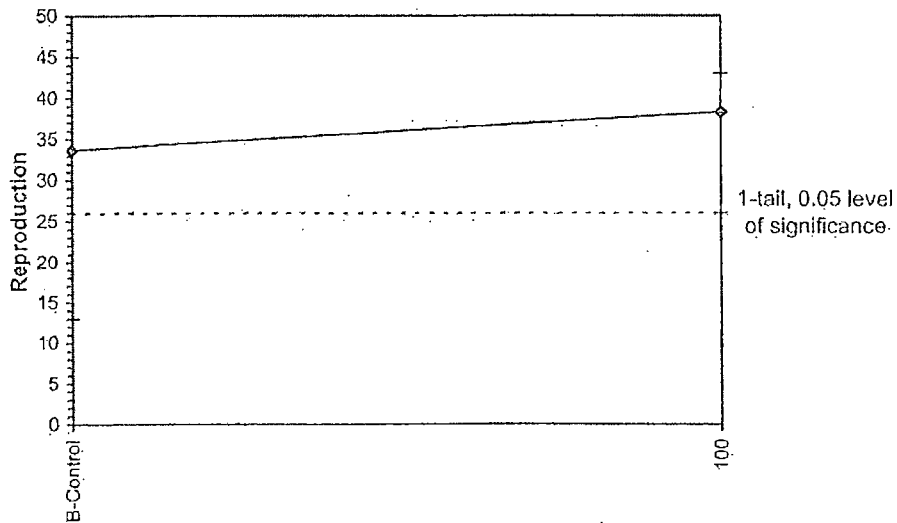
Start Date: 5/15/2018	Test ID: AL0027014	Sample ID: L993780-01,-02,-03
End Date: 5/21/2018	Lab ID: ESC Lab Sciences	Sample Type: EFF1-POTW
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Poly Env. - Headland STP		

Conc-%	1	2	3	4	5	6	7	8	9	10
B-Control	45.000	42.000	39.000	14.000	45.000	13.000	41.000	26.000	38.000	
100	36.000	40.000	41.000	42.000	43.000	42.000	32.000	26.000	41.000	40.000

Conc-%	Mean	N-Mean	Transform: Untransformed					N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%	Critical			MSD	
B-Control	33.667	1.0000	33.667	13.000	45.000	37.864	9				
100	38.300	1.1376	38.300	26.000	43.000	14.197	10	-1.051	1.740	7.673	

Auxiliary Tests		Statistic	Critical	Skew	Kurt					
Shapiro-Wilk's Test indicates non-normal distribution ($p \leq 0.05$)		0.87293	0.901	-1.1197	0.55662					
F-Test indicates unequal variances ($p = 0.02$)		5.49605	4.10196							
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	7.67344	0.22792	101.689	92.1235	0.30813	1, 17
Treatments vs B-Control										

Dose-Response Plot



Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date: 5/15/2018	Test ID: AL0027014	Sample ID: L993780-01,-02,-03
End Date: 5/21/2018	Lab ID: ESC Lab Sciences	Sample Type: EFF1-POTW
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Poly Env. - Headland STP		

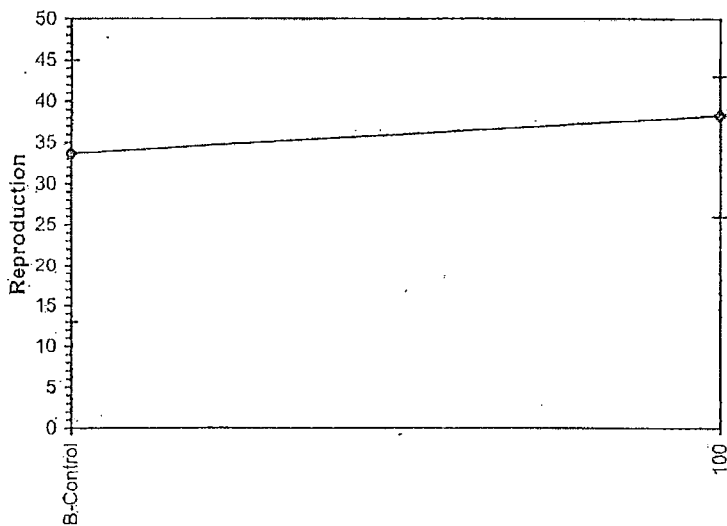
Conc-%	1	2	3	4	5	6	7	8	9	10
B-Control	45.000	42.000	39.000	14.000	45.000	13.000	41.000	26.000	38.000	
100	36.000	40.000	41.000	42.000	43.000	42.000	32.000	26.000	41.000	40.000

Conc-%	Mean	N-Mean	Transform: Untransformed				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
B-Control	33.667	1.0000	33.667	13.000	45.000	37.864	9		
100	38.300	1.1376	38.300	26.000	43.000	14.197	10	104.50	79.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.87293	0.901	-1.1197	0.55662
F-Test indicates unequal variances (p = 0.02)	5.49605	4.10196		

Hypothesis Test (1-tail, 0.05)
 Wilcoxon Two-Sample Test indicates no significant differences
 Treatments vs B-Control.

Dose-Response Plot



TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow) 7-Day Survival & Weight Data

Poly Env. - Headland STP

Test Date: May 15-22, 2018

NPDES #: AL0027014

NUMBER OF SURVIVORS									
Sample Distribution		Sample #1 Tues/Wed		Sample #2 Thurs/Fri		Sample #3 Sat/Sun/Mon			
Day of the Week and Date		Tue 5/15/18	Wed 5/16/18	Thu 5/17/18	Fri 5/18/18	Sat 5/19/18	Sun 5/20/18	Mon 5/21/18	Tue 5/22/18
Effluent Conc. In%	ID of Rep.	0 hours	24 hours	48 hours	72 hours	96 hours	97 hours	144 hours	168 hours
Control #4	A: 1	10	10	10	10	10	10	10	10
	B: 2	10	10	10	10	10	10	10	10
	C: 3	10	9	9	9	9	9	9	9
	D: 5	10	10	10	10	10	10	10	10
100	A: 2	10	10	10	10	10	10	10	8
	B: 3	10	10	10	10	9	9	9	9
	C: 4	10	10	10	10	10	10	10	10
	D: 6	10	10	10	10	10	10	10	10
Initials of Analyst Checking Survival		NY	JB	NY	KH	PB/KH	NY	NY	JB
Time that Minnows were Examined:		13:36	10:40	13:45	10:36	11:03	10:35	10:23	9:17
Carboy used to dilute samples:		F 5-14	F 5-14	F 5-16	F 5-16	F 5-18	F 5-19	F 5-20	

COMMENTS: Minnows used in this test are from ESC Lot#

051418HD Minnows were hatched on 5/14/2018

Survival \geq 80%?
 YES NO

$>$ 0.25mg Average Weight
 in Surviving Controls?
 YES NO

Control Valid?
 YES NO

WEIGHT DATA for SURVIVING MINNOWS							
	Weight Empty Boat (mg)	Boat w/ Fish (mg)	Weight of Larvae (mg)	Mean Weight of Larvae (mg)	Total of Mean	Mean per Concentration	
Control	A	1293.69	1298.08	4.39	0.439	2.1070	0.5267
	B	1301.66	1307.18	5.52	0.552		
	C	1297.15	1302.14	4.99	0.499		
	D	1290.82	1296.99	6.17	0.617		
100	A	1296.1	1300.18	4.08	0.408	1.9960	0.4990
	B	1320.52	1325.84	5.32	0.532		
	C	1298.7	1303.99	5.29	0.529		
	D	1307.57	1312.84	5.27	0.527		
Analyst:		JB	JB				

Date & Time Put in Oven	Date & Time Removed
5-22-18 @ 9:36	5-23-18 @ 10:01

Oven Temp:	72°C	Oven Temp:	74°C
------------	------	------------	------

Analyst:	JB	Analyst:	JB
----------	----	----------	----

Login #: L993780-01,-02,-03

Larval Fish Growth and Survival Test-7 Day Survival

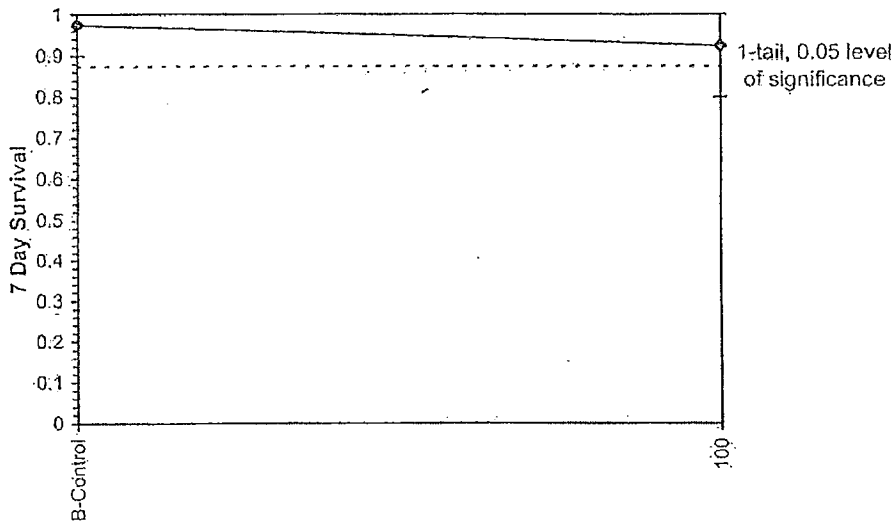
Start Date: 5/15/2018	Test ID: AL0027014	Sample ID: L993780-01,-02,-03
End Date: 5/22/2018	Lab ID: ESC Lab Sciences	Sample Type: EFF1-POTW
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: PP-Pimephales promelas
Comments: Poly Env. - Headland STP		

Conc-%	1	2	3	4
B-Control	1.0000	1.0000	0.9000	1.0000
100	0.8000	0.9000	1.0000	1.0000

Conc-%	Transform: Arcsin Square Root						1-Tailed			
	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
B-Control	0.9750	1.0000	1.3713	1.2490	1.4120	5.942	4			
100	0.9250	0.9487	1.2951	1.1071	1.4120	11.347	4	0.907	1.943	0.1633

Auxiliary Tests	Statistic	Critical	Skew	Kurt		
Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$)	0.89479	0.818	-0.7377	-0.552		
F-Test indicates equal variances ($p = 0.36$)	3.25236	15.4391				
Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences Treatments vs B-Control	0.08665	0.0902	0.01162	0.01412	0.39928	1, 6

Dose-Response Plot



Larval Fish Growth and Survival Test-7 Day Biomass

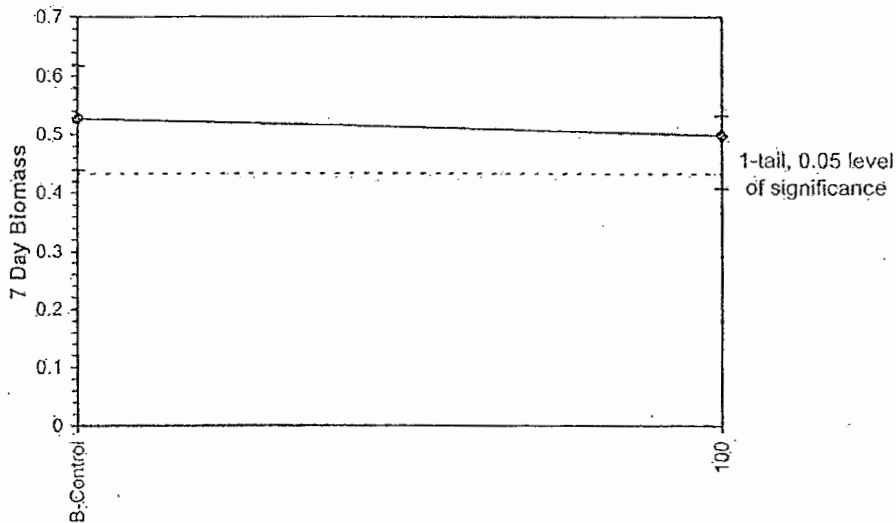
Start Date: 5/15/2018 Test ID: AL0027014 Sample ID: L993780-01,-02,-03
 End Date: 5/22/2018 Lab ID: ESC Lab Sciences Sample Type: EFF1-POTW
 Sample Date: Protocol: EPAF 94-EPA Freshwater Test Species: PP-Pimephales promelas
 Comments: Poly Env. - Headland STP

Conc-%	1	2	3	4
B-Control	0.4390	0.5520	0.4990	0.6170
100	0.4080	0.5320	0.5290	0.5270

Conc-%	Mean	N-Mean	Transform: Untransformed				N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%			Critical	MSD
B-Control	0.5267	1.0000	0.5267	0.4390	0.6170	14.397	4	0.571	1.940	0.0942
100	0.4990	0.9473	0.4990	0.4080	0.5320	12.165	4			

Auxiliary Tests	Statistic	Critical	Skew	Kurt						
Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$)	0.88323	0.818	-0.4552	-0.7524						
F-Test indicates equal variances ($p = 0.72$)	1.56077	15.4391								
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.09422	0.17888	0.00154	0.00472	0.5885	1, 6
Treatments vs B-Control										

Dose-Response Plot



Larval Fish Growth and Survival Test-7 Day Biomass

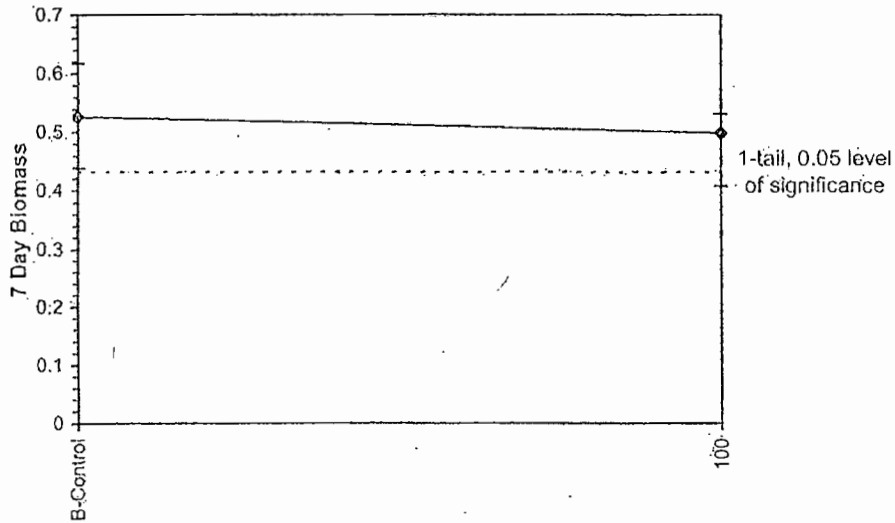
Start Date: 5/15/2018 Test ID: AL0027014 Sample ID: L993780-01,-02,-03
 End Date: 5/22/2018 Lab ID: ESC Lab Sciences Sample Type: EFF1-POTW
 Sample Date: Protocol: EPAF 94-EPA Freshwater Test Species: PP-Pimephales promelas
 Comments: Poly Env. - Headland STP

Conc-%	1	2	3	4
B-Control	0.4390	0.5520	0.4990	0.6170
100	0.4080	0.5320	0.5290	0.5270

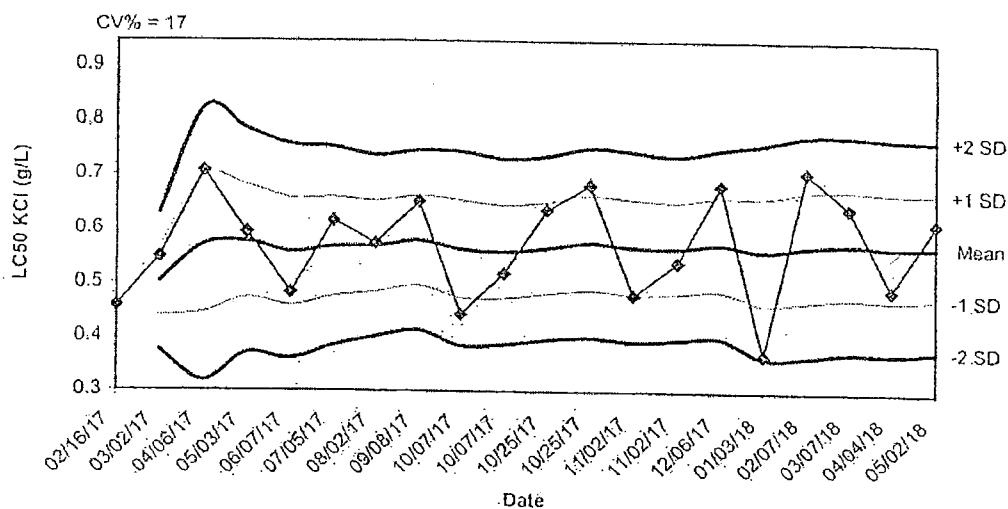
Conc-%	Transform: Untransformed							1-Tailed		
	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
B-Control	0.5267	1.0000	0.5267	0.4390	0.6170	14.397	4			
100	0.4990	0.9473	0.4990	0.4080	0.5320	12.165	4	0.571	1.943	0.0944

Auxiliary Tests	Statistic	Critical	Skew	Kurt		
Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$)	0.88323	0.818	-0.4552	-0.7524		
F-Test indicates equal variances ($p = 0.72$)	1.56077	15.4391				
Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic Test indicates no significant differences	0.09438	0.17917	0.00154	0.00472	0.5885	1, 6
Treatments vs B-Control						

Dose-Response Plot



Control Chart for May 2018 Acute C. dubia Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
02/16/17	0.4579					
03/02/17	0.5486	0.5033	0.4391	0.3750	0.5674	0.6315
04/06/17	0.7071	0.5712	0.4451	0.3190	0.6973	0.8234
05/03/17	0.5946	0.5771	0.4734	0.3698	0.6807	0.7843
06/07/17	0.4830	0.5582	0.4591	0.3600	0.6574	0.7565
07/05/17	0.6164	0.5679	0.4762	0.3844	0.6597	0.7515
08/02/17	0.5743	0.5688	0.4850	0.4012	0.6527	0.7365
09/08/17	0.6515	0.5792	0.4963	0.4133	0.6621	0.7450
10/07/17	0.4433	0.5641	0.4743	0.3844	0.6539	0.7437
10/07/17	0.5196	0.5596	0.4738	0.3879	0.6455	0.7313
10/25/17	0.6373	0.5667	0.4820	0.3972	0.6514	0.7362
10/25/17	0.6830	0.5764	0.4889	0.4014	0.6639	0.7514
11/02/17	0.4798	0.5690	0.4810	0.3931	0.6569	0.7449
11/02/17	0.5402	0.5669	0.4821	0.3972	0.6517	0.7366
12/06/17	0.6830	0.5746	0.4876	0.4005	0.6617	0.7488
01/03/18	0.3693	0.5618	0.4633	0.3647	0.6604	0.7589
02/07/18	0.7071	0.5704	0.4686	0.3669	0.6721	0.7738
03/07/18	0.6429	0.5744	0.4742	0.3741	0.6745	0.7747
04/04/18	0.4910	0.5700	0.4708	0.3716	0.6692	0.7684
05/02/18	0.6156	0.5723	0.4752	0.3781	0.6694	0.7665

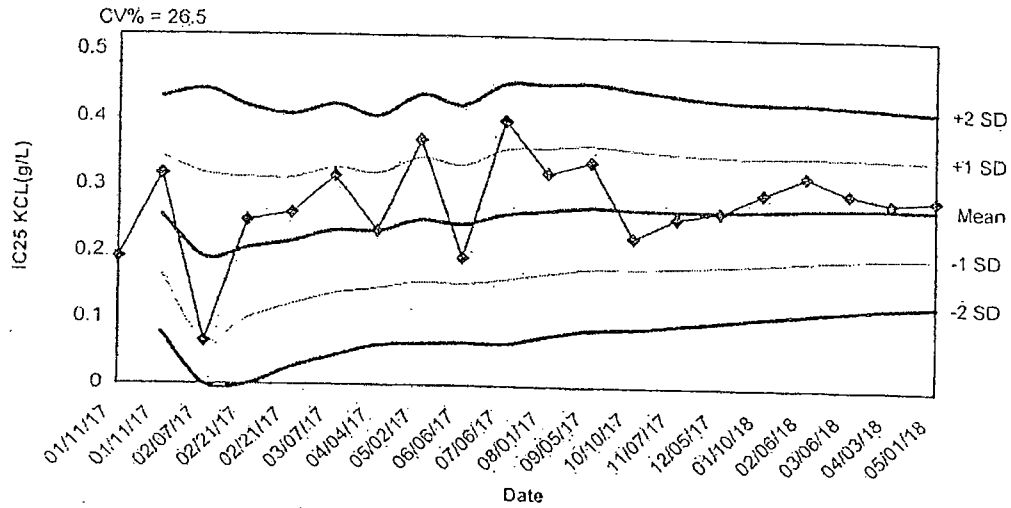


12065 Lebanon Rd
Mt. Juliet, TN 37122

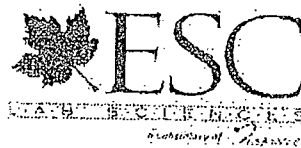
(615) 773-7549
(615) 758-5859 Fax

May 2018
Reference Toxicant Test

Control Chart for May 2018 Chronic C. dubia Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
01/11/17	0.1921					
01/11/17	0.3169	0.2545	0.1663	0.0780	0.3427	0.4310
02/07/17	0.0655	0.1915	0.0658	0.0000	0.3172	0.4429
02/21/17	0.2476	0.2055	0.0991	0.0000	0.3119	0.4183
02/21/17	0.2590	0.2162	0.1210	0.0258	0.3114	0.4066
03/07/17	0.3150	0.2327	0.1385	0.0443	0.3269	0.4211
04/04/17	0.2329	0.2327	0.1467	0.0607	0.3187	0.4047
05/02/17	0.3693	0.2498	0.1567	0.0635	0.3429	0.4360
06/06/17	0.1938	0.2436	0.1545	0.0654	0.3327	0.4217
07/06/17	0.3988	0.2591	0.1618	0.0646	0.3564	0.4537
08/01/17	0.3209	0.2647	0.1706	0.0764	0.3589	0.4530
09/05/17	0.3382	0.2708	0.1786	0.0863	0.3631	0.4553
10/10/17	0.2255	0.2673	0.1781	0.0889	0.3566	0.4458
11/07/17	0.2558	0.2665	0.1808	0.0950	0.3523	0.4381
12/05/17	0.2650	0.2664	0.1838	0.1011	0.3491	0.4317
01/10/18	0.2944	0.2682	0.1880	0.1079	0.3483	0.4285
02/06/18	0.3203	0.2712	0.1926	0.1140	0.3499	0.4285
03/06/18	0.2956	0.2726	0.1961	0.1196	0.3491	0.4256
04/03/18	0.2819	0.2731	0.1987	0.1243	0.3475	0.4218
05/01/18	0.2879	0.2738	0.2014	0.1289	0.3463	0.4187

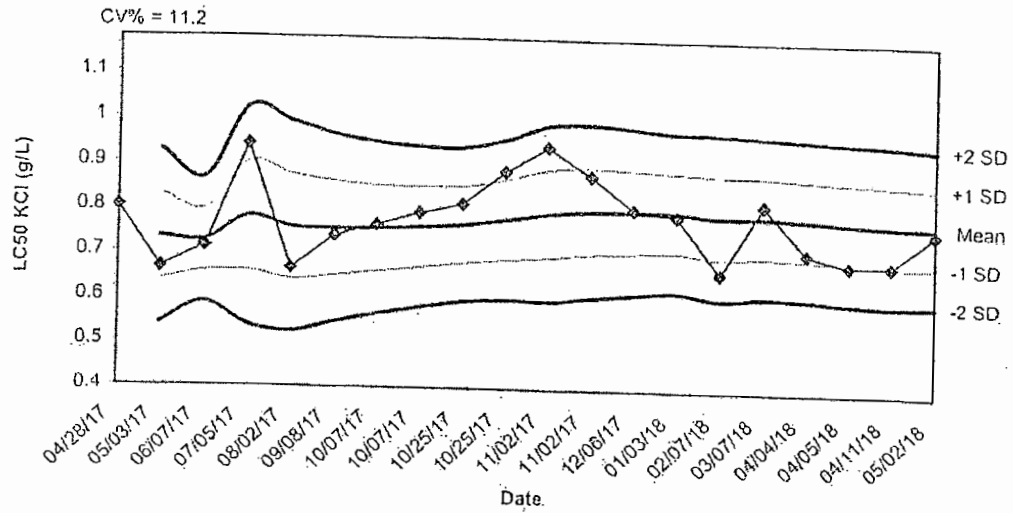


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

May 2018
Reference Toxicant Test

Control Chart for May 2018 Acute Minnow Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/28/17	0.8024					
05/03/17	0.6657	0.7341	0.6374	0.5407	0.8307	0.9274
06/07/17	0.7135	0.7272	0.6578	0.5885	0.7966	0.8659
07/05/17	0.9415	0.7808	0.6596	0.5384	0.9020	1.0232
08/02/17	0.6657	0.7578	0.6409	0.5240	0.8747	0.9916
09/08/17	0.7387	0.7546	0.6497	0.5449	0.8594	0.9643
10/07/17	0.7647	0.7560	0.6602	0.5645	0.8518	0.9476
10/07/17	0.7917	0.7605	0.6709	0.5813	0.8501	0.9396
10/25/17	0.8128	0.7663	0.6807	0.5951	0.8519	0.9375
10/25/17	0.8858	0.7783	0.6891	0.6000	0.8674	0.9565
11/02/17	0.9415	0.7931	0.6953	0.5975	0.8909	0.9887
11/02/17	0.8785	0.8002	0.7037	0.6073	0.8967	0.9931
12/06/17	0.8045	0.8005	0.7082	0.6158	0.8929	0.9853
01/03/18	0.7917	0.7999	0.7111	0.6224	0.8887	0.9775
02/07/18	0.6657	0.7910	0.6987	0.6064	0.8833	0.9756
03/07/18	0.8196	0.7928	0.7033	0.6138	0.8822	0.9717
04/04/18	0.7135	0.7881	0.6994	0.6106	0.8768	0.9655
04/05/18	0.6892	0.7826	0.6934	0.6042	0.8718	0.9609
04/11/18	0.6892	0.7777	0.6884	0.5991	0.8670	0.9562
05/02/18	0.7647	0.7770	0.6901	0.6032	0.8640	0.9509

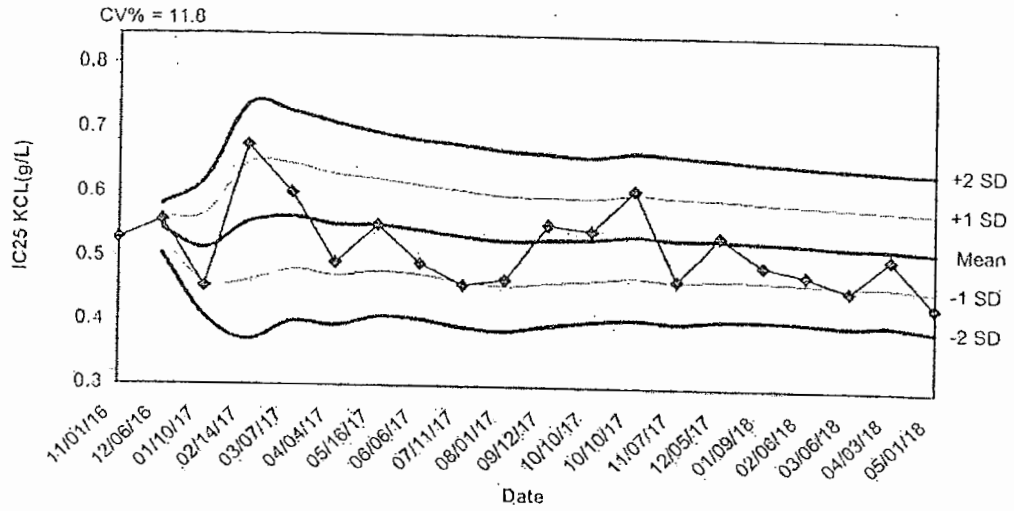


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

May 2018
Reference Toxicant Test

Control Chart for May 2018 Chronic P. promelas Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/01/16	0.5297					
12/06/16	0.5573	0.5435	0.5240	0.5045	0.5630	0.5825
01/10/17	0.4545	0.5138	0.4606	0.4074	0.5670	0.6202
02/14/17	0.6743	0.5540	0.4627	0.3715	0.6452	0.7364
03/07/17	0.6009	0.5633	0.4816	0.3998	0.6451	0.7269
04/04/17	0.4926	0.5516	0.4729	0.3943	0.6302	0.7088
05/16/17	0.5522	0.5516	0.4799	0.4081	0.6234	0.6952
06/06/17	0.4925	0.5443	0.4746	0.4049	0.6139	0.6836
07/11/17	0.4597	0.5349	0.4639	0.3929	0.6059	0.6768
08/01/17	0.4685	0.5282	0.4581	0.3879	0.6059	0.6768
09/12/17	0.5547	0.5306	0.4636	0.3966	0.5977	0.6647
10/10/17	0.5459	0.5319	0.4678	0.4038	0.5960	0.6600
10/10/17	0.6094	0.5379	0.4729	0.4079	0.6028	0.6678
11/07/17	0.4694	0.5330	0.4679	0.4028	0.5980	0.6631
12/05/17	0.5379	0.5333	0.4706	0.4079	0.5960	0.6587
01/09/18	0.4941	0.5309	0.4695	0.4081	0.5922	0.6536
02/06/18	0.4800	0.5279	0.4672	0.4065	0.5885	0.6492
03/06/18	0.4562	0.5239	0.4626	0.4014	0.5851	0.6464
04/03/18	0.5069	0.5230	0.4633	0.4037	0.5826	0.6423
05/01/18	0.4335	0.5185	0.4571	0.3957	0.5799	0.6413



12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

May 2018
Reference Toxicant Test



Datasheet printed by: SWS

Control Water (Tank ID): A050118

Control Water (Begin Use Date): 5-2-18

Ceriodaphnia dubia Acute Reference Toxicant Test

Month of: May 2018

Test Start Date: 5-2-18

Toxicant: potassium chloride (KCl)

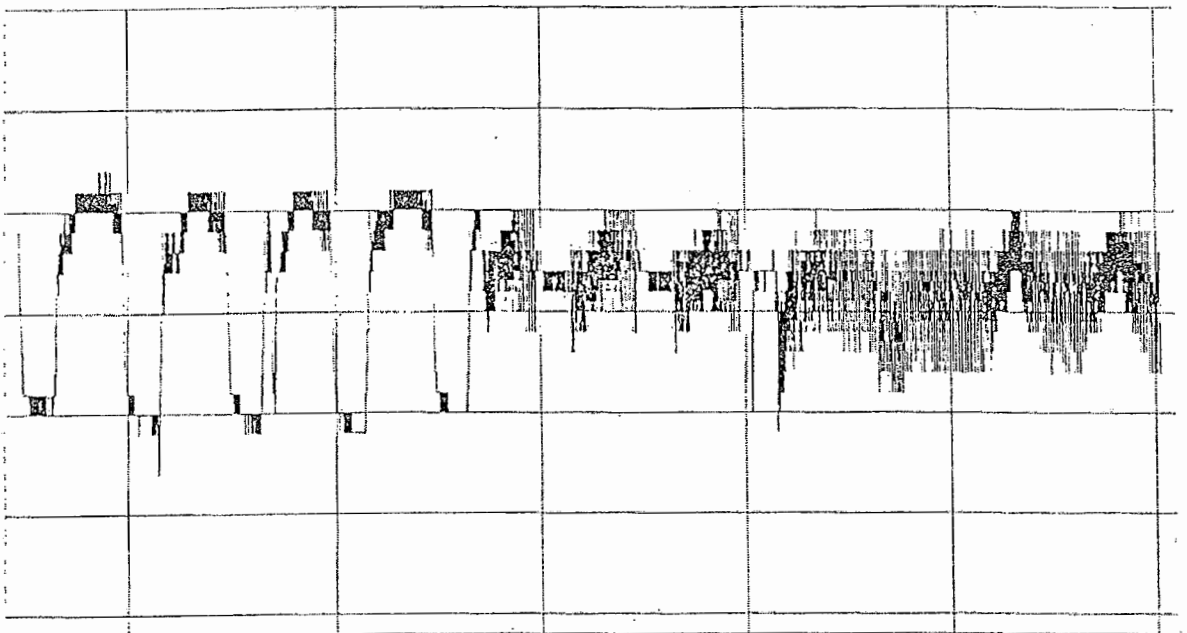
Thermometer Serial #: 18050063

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)	Analyst: <u>MS</u>	Analyst: <u>MY</u>	Analyst: <u>KA</u>	Analyst: <u>KR</u>	
					0 hrs
CONTROL	Ceriodaphnia	24.2 °C	24.9 °C	24.3 °C	25.0 °C
0.0625	Ceriodaphnia	24.6 °C	24.9 °C	24.3 °C	25.0 °C
0.125	Ceriodaphnia	24.6 °C	24.8 °C	24.4 °C	24.8 °C
0.25	Ceriodaphnia	24.7 °C	24.8 °C	24.3 °C	24.8 °C
0.5	Ceriodaphnia	24.8 °C	24.9 °C	24.4 °C	24.8 °C
1	Ceriodaphnia	24.8 °C	24.9 °C	24.3 °C	24.8 °C

May 2018 Reference Toxicant Test

Sample ID: Ceriodaphnia dubia Acute Reference Toxicant Test



ch	Name	Intvl.	Sample	Cur.A	Cur.B	Ac-B	High	Low	Avg.	Unit
1	Ch1	2min.	0000	-----	-----	-----	25.7	24.2	25.1	°C
2	Ch2	2min.	0000	-----	-----	-----	25.7	24.2	25.1	°C

Cur.A Date : 04/26/2018 19:21:52
 Cur.B Date : 05/03/2018 4:24:09
 Diff. A-B : 11 09:02:17.000

Data Range 04/26/2018 19:21:52-05/03/2018 4:24:09
 Calc.Range 04/26/2018 22:33:50-05/03/2018 1:12:11

May 2018 Reference Toxicant Test

Week of 5-1-18
to 5-8-18

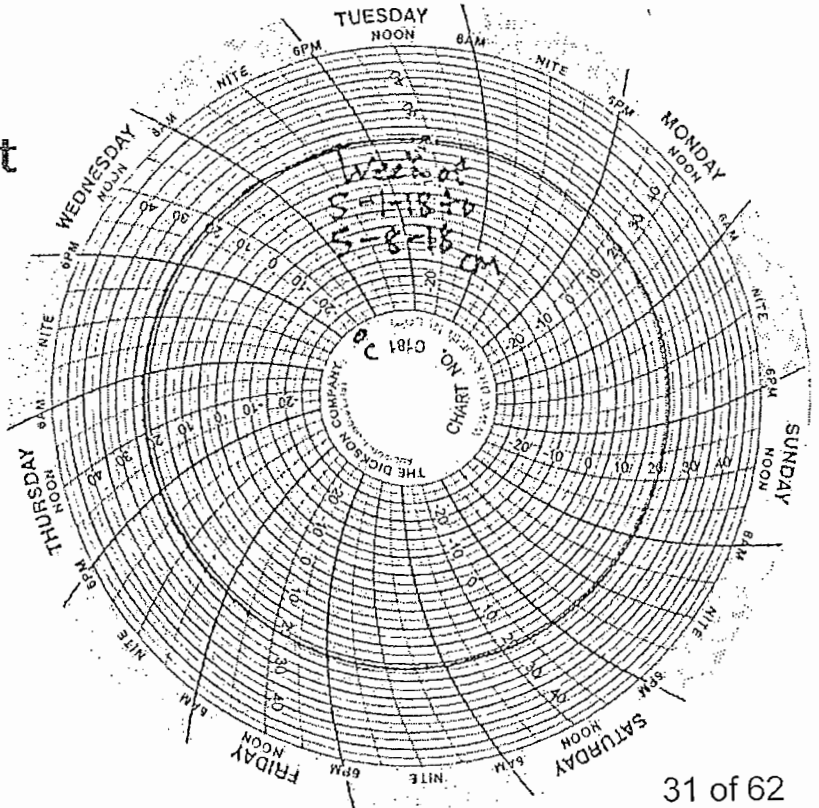


Chart Devices Used in
Thermo-Kool Walk-in Incubator

Dickson (small chart)



ACUTE TOXICITY TEST DATA SHEET - *Geriodaphnia dubia* (water flea)

Client: **C. dubia 48-hr Acute Reference Toxicant Test**

Toxicant Used: potassium chloride

Template Name: Violet
 Month of: **May 2018**

Begin: 5-2-18
 End: 5-4-18

Time: 16:35 *end test +/- 1 hr from start time
 Time: 15:45

Test Duration: 48 hours
 Dilution Water: Moderately Hard SDW

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE <i>C. dubia</i>		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	5	5	5
	B: 2	5	5	5
	C: 5	5	5	5
	D: 5	5	5	5
0.0625	A: 2	5	5	5
	B: 1	5	5	5
	C: 4	5	5	5
	D: 6	5	5	5
0.125	A: 3	5	5	5
	B: 3	5	5	5
	C: 6	5	5	5
	D: 2	5	5	5
0.25	A: 4	5	5	5
	B: 5	5	5	4
	C: 3	5	5	5
	D: 1	5	5	4
0.5	A: 5	5	5	5
	B: 6	5	5	5
	C: 2	5	5	4
	D: 4	5	5	4
1.0	A: 6	5	0	0
	B: 4	5	0	0
	C: 3	5	0	0
	D: 1	5	0	0
Checked By: <u>KH/KH</u>	Biologist: <u>KB/KH</u> <u>KH</u> <u>JK</u>	Time: <u>16:35</u> <u>10:10</u> <u>15:35</u>		

Check here to confirm final temperatures have been recorded on the temperature benchsheet.



pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
initial		initial	
7.9	6.0	8.00	6.6
initial		initial	
8.0	4.0	8.10	6.1
initial		initial	
7.9	6.0	8.00	6.0
initial		initial	
8.0	6.0	8.00	7.9
initial		initial	
7.9	6.0	8.00	7.8
initial		initial	
7.9	7.8*	8.00	8.1*
7.9	7.8	8.00	7.9

Initial Readings By: PB 15:50

May 2018

Reference Toxicant Test

Conductivity (umhos/cm)	
0 hrs	final
initial	
318	2868
initial	
393	401
initial	
517	525
initial	
748	755
initial	
1,235	1335
initial	
2,200	2,232*
2,192	2,204

Final Readings By: KH 16:15

	Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	46	62
1.0 Concentration	< 0.2	47	67

* TAKEN DUE TO DEATH
 KH 5 318
 L 991052701
 L 9910525-03

Lot # of KCl Stock Solution:
050118KCl

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.
C. dubia are < 24 hrs old; *C. dubia* were harvested from tray 043018XA2
 on 5/1/18 @ 16:37 to 5/2/18 @ 08:22.
C. dubia were last fed 5/2/18 @ 14:35.



Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

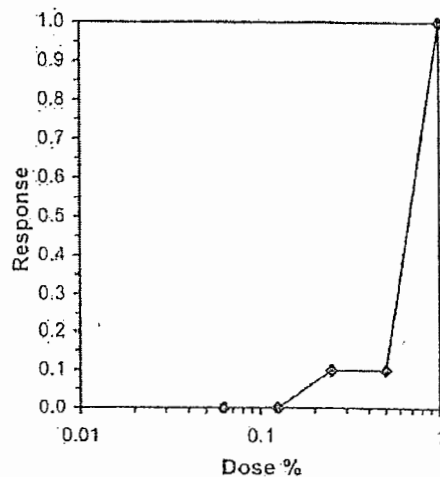
Start Date: 5/2/2018	Test ID: RTCD050218	Sample ID: REF-Ref Toxicant
End Date: 5/4/2018	Lab ID: ESC Lab Sciences	Sample Type: KCL-Potassium chloride
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Reference Toxicant C. dubia Acute May 2018		

Conc-%	1	2	3	4
B-Control	1.0000	1.0000	1.0000	1.0000
0.0625	1.0000	1.0000	1.0000	1.0000
0.125	1.0000	1.0000	1.0000	1.0000
0.25	1.0000	0.8000	1.0000	0.8000
0.5	1.0000	1.0000	0.8000	0.8000
1	0.0000	0.0000	0.0000	0.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					N	Number Resp	Total Number
			Mean	Min	Max	CV%				
B-Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20	
0.0625	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20	
0.125	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20	
0.25	0.9000	0.9000	1.2262	1.1071	1.3453	11.212	4	2	20	
0.5	0.9000	0.9000	1.2262	1.1071	1.3453	11.212	4	2	20	
1	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4	20	20	

Auxiliary Tests	Statistic:	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.79317	0.868	2.9E-15	-0.2794
Equality of variance cannot be confirmed				

Trimmed Spearman-Kärber			
Trim Level	EC50	95% CL	
0.0%	0.6156	0.5397	0.7021
5.0%	0.6491	0.5659	0.7446
10.0%	0.6804	0.6424	0.7206
20.0%	0.6804	0.6424	0.7206
Auto-0.0%	0.6156	0.5397	0.7021



May 2018 Reference Toxicant Test

Reference Toxicant May 2018

NPDES #: KCI

Test Date: May 1-8, 2018

Login #: Potassium Chloride

Tue 5/1/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.8	269.1	9.1	14:03:52	NY
Dup. Control	7.9	260.7	8.9	14:05:32	NY
0.05	7.9	364	9	14:06:06	NY
Dup. 0.05	7.9	364	9	14:06:15	NY
0.1	7.9	461	8.7	14:06:35	NY
Dup. 0.1	7.9	461	8.7	14:06:41	NY
0.2	7.9	655	8.6	14:07:03	NY
Dup. 0.2	7.9	652	8.6	14:07:22	NY
0.4	7.9	1048	8.6	14:07:43	NY
Dup. 0.4	7.9	1048	8.6	14:07:48	NY
0.8	7.9	1800	8.6	14:08:12	NY
Dup. 0.8	7.9	1800	8.6	14:08:23	NY

Comments

Control 8

Wed 5/2/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	241.1	8.6	9:12:09	PB
0.05	7.9	357	8.6	9:12:41	PB
0.1	7.9	460	8.8	9:13:10	PB
0.2	7.9	672	9.1	9:13:30	PB
0.4	7.9	1079	9.2	9:14:06	PB
0.8	7.9	1355	9.2	9:14:38	PB

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	7.9	7.8	13:25:54	JB
Dup. Control	7.9	8.2	13:26:12	JB
0.05	7.9	8.2	13:26:52	JB
Dup. 0.05	7.9	8.2	13:27:11	JB
0.1	7.9	8.2	13:27:42	JB
Dup. 0.1	7.9	8.2	13:28:05	JB
0.2	7.9	8.2	13:28:52	JB
Dup. 0.2	7.9	8	13:29:40	JB
0.4	7.8	8	13:30:22	JB
Dup. 0.4	7.9	8	13:30:45	JB
0.8	7.8	8	13:31:11	JB
Dup. 0.8	7.8	7.9	13:31:45	JB

Thu 5/3/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.8	255.3	9.7	9:39:16	JB
0.05	7.8	358	9.9	9:39:42	JB
0.1	7.9	460	9.9	9:40:21	JB
0.2	7.9	674	9.9	9:40:40	JB
0.4	7.9	1070	9.9	9:41:23	JB
0.8	7.9	1894	10.1	9:41:46	JB

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	7.2	8.4	10:48:22	NY
0.05	7.9	8.3	10:51:11	NY
0.1	7.9	8.3	10:51:55	NY
0.2	7.9	8.3	10:52:18	NY
0.4	7.9	8.3	10:52:40	NY
0.8	7.9	8.3	10:53:09	NY

Fri 5/4/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.4	246.4	8.6	9:41:43	kh
0.05	7.8	360	10.1	9:42:32	kh
0.1	7.9	454	9.9	9:50:40	kh
0.2	8	667	10.2	10:02:36	kh
0.4	8	1063	10.1	10:03:11	kh
0.8					kh

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8.1	8.6	15:08:56	kh
0.05	8.1	8.7	15:09:33	kh
0.1	8.1	8.7	15:12:14	kh
0.2	8	8.7	15:17:40	kh
0.4	8	8.7	15:18:06	kh
0.8				kh

May 2018
Reference Toxicant Test

Reference Toxicant May 2018

NPDES #: KCI
 Sat 5/5/18

Test Date: May 1-8, 2018
 Ceriodaphnia dubia (water flea)

Login #: Potassium Chloride

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	244.9	9.3	8:53:28	KR
0.05	7.9	349	9.7	8:54:30	KR
0.1	7.9	449	10.2	8:55:53	KR
0.2	7.8	653	10.4	8:56:37	KR
0.4	7.8	1062	10.3	8:57:01	KR
0.8					KR

Initials	pH	DO	Time	Analyst
Control	7.7	8.4	10:47:50	MH
0.05	7.9	8.2	10:48:37	MH
0.1	8	8.2	10:49:11	MH
0.2	8	8.2	10:49:33	MH
0.4	8.1	8.2	10:50:01	MH
0.8				MH

Sun 5/6/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.6	282.7	9.1	10:15:17	NY
0.05	7.8	373	9.3	10:17:11	NY
0.1	7.9	471	9.1	10:18:39	NY
0.2	7.9	687	9.3	10:21:32	NY
0.4	7.9	1083	9.3	10:22:57	NY
0.8					NY

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8.1	8.4	12:36:41	NY
0.05	8	8.2	12:37:05	NY
0.1	8	8.4	12:37:33	NY
0.2	8	8.5	12:38:01	NY
0.4	8	8.5	12:38:32	NY
0.8				NY

Mon 5/7/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.7	255.1	9.1	15:53:29	CN
0.05	7.8	346	9.1	15:54:24	CN
0.1	7.8	455	10	15:55:04	CN
0.2	7.7	670	10.2	15:55:37	CN
0.4	7.7	1074	10.4	15:56:13	CN
0.8					CN

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8	8.5	16:36:17	CN
0.05	8	8.4	16:36:52	CN
0.1	8	8.4	16:37:19	CN
0.2	7.9	8.4	16:37:44	CN
0.4	7.9	8.4	16:38:08	CN
0.8				CN

Tue 5/8/18

Initials	pH	Cond.	DO	Time	Analyst
Control	/	/	/	/	
0.05	/	/	/	/	
0.1	/	/	/	/	0
0.2	/	/	/	/	0
0.4	/	/	/	/	0
0.8	/	/	/	/	0

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8	7.4	16:15:30	CN
0.05	8	8	16:16:09	CN
0.1	7.9	8.1	16:16:35	CN
0.2	7.8	8.1	16:17:10	CN
0.4	7.8	8	16:17:34	CN
0.8				CN

Initials	pH		Conductivity		DO	
	range	mean	range	mean	range	mean
Control	7.4-7.9	7.6	241.1-282.7	257	8.6-9.7	9.1
0.05	7.8-7.9	7.9	346-373	359	8.8-10.1	9.4
0.1	7.8-7.9	7.9	449-471	459	8.7-10.2	9.4
0.2	7.7-8	7.9	652-687	666	8.6-10.3	9.5
0.4	7.7-8	7.9	1048-1083	1066	8.6-10.4	9.6
0.8	7.9-7.9	7.9	1809-1894	1837	8.6-10.1	9.1

Initials	pH		DO	
	range	mean	range	mean
Control	7.2-8.1	7.9	7.4-8.6	8.2
0.05	7.9-8.1	8.0	8.8-9.1	8.3
0.1	7.9-8.1	8.0	8.1-8.7	8.3
0.2	7.8-8	7.9	8.8-9.7	8.3
0.4	7.8-8.1	7.9	8.8-9.7	8.3
0.8	7.8-7.9	7.8	7.9-8.3	8.1

May 2018
 Reference Toxicant Test

Reference Toxicant May 2018

Ceriodaphnia dubia (water flea)

Toxicant: Potassium Chloride Test Date: May 1-8, 2018 Lot of KCl Used: 050118KCl

Reference Toxicant Control SDW

L# of Control	Control Water Tank ID	Begin Use Date	Alkalinity	Hardness
L990142-05	L 043018	5/1/2018	46	59
L990142-06	L 043018	5/1/2018	45	62
L990530-02	Reference Toxicant (0.8% KCl)	5/1/2018	46	59

Temperature Data (in degrees Celsius)

May 2018 Reference Toxicant Test

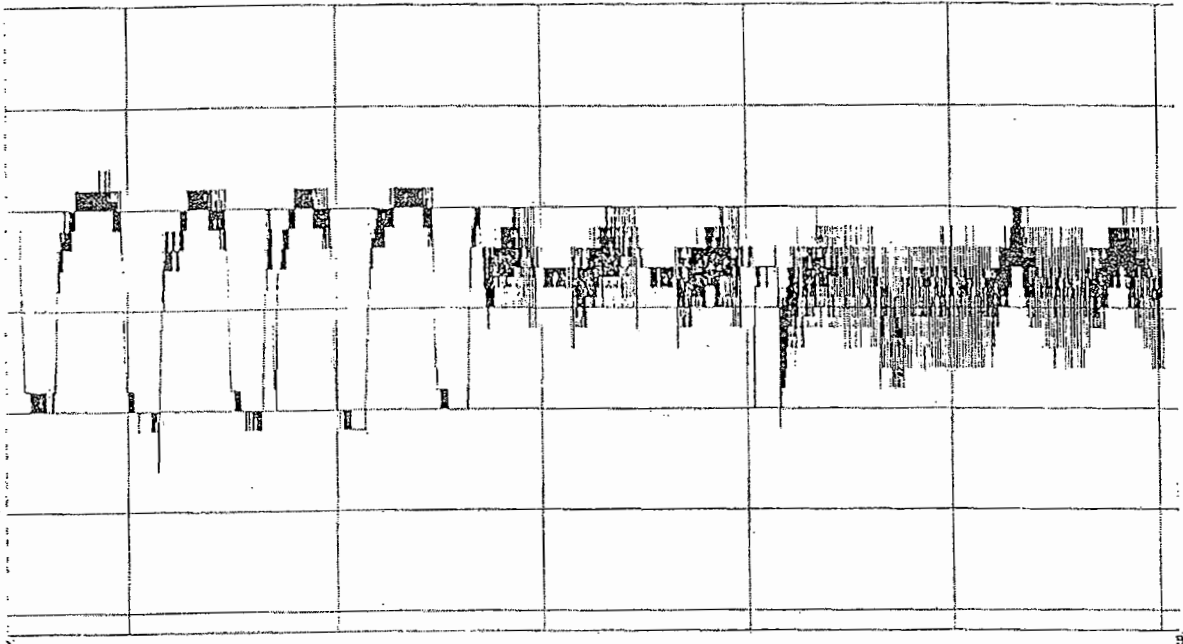
Temperature *Ceriodaphnia dubia* (measurement taken in test chambers)

	Tue 5/1/18	Wed 5/2/18	Thu 5/3/18	Fri 5/4/18	Sat 5/5/18	Sun 5/6/18	Mon 5/7/18	Tue 5/8/18
	Analyst:	Analyst:	Analyst:	Analyst:	Analyst:	Analyst:	Analyst:	Analyst:
	CGM	NY PB	NY NY	KR SK	MH KH	NY CM	NY CM	NY
Control	25.1°C	24.8°C 25.5°C	24.6°C 24.5°C	24.3°C 25.5°C	24.3°C 25.7°C	24.6°C 24.3°C	24.2°C 25.9°C	24.2°C
0.05	25.1°C	24.8°C 25.9°C	24.6°C 24.5°C	24.3°C 25.8°C	24.2°C 25.5°C	24.5°C 24.3°C	24.2°C 25.9°C	24.3°C
0.1	25.3°C	24.6°C 25.3°C	24.5°C 24.4°C	24.5°C 25.8°C	24.3°C 25.6°C	24.5°C 24.2°C	24.3°C 26.0°C	24.3°C
0.2	25.3°C	24.7°C 25.3°C	24.5°C 24.3°C	24.4°C 25.9°C	24.2°C 25.2°C	24.3°C 24.2°C	24.3°C 26.0°C	24.3°C
0.4	25.5°C	24.7°C 25.7°C	24.0°C 24.3°C	24.4°C 25.7°C	24.1°C 25.9°C	24.5°C 24.2°C	24.2°C 26.0°C	24.2°C
0.8	25.5°C	24.7°C 24.6°C	24.6°C 24.2°C	/	/	/	/	/

Thermometer serial number:

18050064

Reference Toxicant (C. dubia)



Ch	Name	Intvl.	Sample	Cur. A	Cur. B	A-B	High	Low	Avg.	Unit
1	Ch1	2min.	3000	-----	-----	-----	25.7	24.1	25.1	°C
2	Ch2	2min.	3000	-----	-----	-----	25.7	24.1	25.1	°C

Cur. A Date: 04/26/2018 19:21:52
 Cur. B Date: 05/09/2018 4:24:09
 Diff. A-B: 11 09:02:17.000

Data Range 04/26/2018 19:21:52-05/09/2018 4:24:09
 Calc. Range 04/26/2018 22:33:50-05/09/2018 1:12:11

May 2018 Reference Toxicant Test

Week of 5-1-18
to 5-8-18

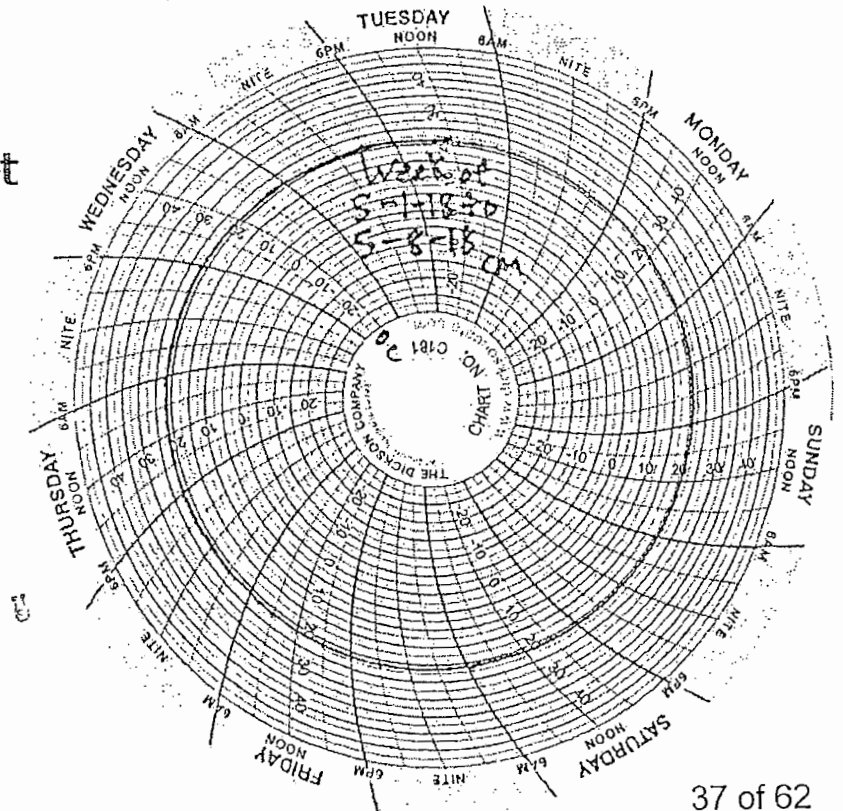


Chart Devices Used in
Thermo-Kool Walk-in Incubator:

Dickson (small chart)



L #: Potassium Chloride

Date(s) and Time(s) of Neonate Harvest: From 15:45 on 4/30/2018 to 23:10 on 4/30/2018

Neonates were Harvested from the Following Trays:

043018XA1 043018XA1 043018XA1 043018XA1 043018XA1 043018XA2 043018XA2 043018XA2 043018XA2 043018XA2

Template Name:

Neonates were Harvested from the Following Cups:

F5 F7 G4 G7 H7 B2 C3 C5 D1 D4

ELM

Control Water
Carboy Used

Description of Sample Being Analyzed Below:				CONTROL 8 Reference Toxicant May 2018											KCI	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 1	B: 6	C: 2	D: 6	E: 4	F: 7	G: 3	H: 7	I: 5	J: 1			
L,1 4-30	Tue 5/1/18	14:57	CGM	initiation	0	0	0	0	0	0	0	0	0	0	0	10
L,1 4-30	Wed 5/2/18	10:56	PB/CGM	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
L,1 4-30	Thu 5/3/18	10:12	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10
L,1 4-30	Fri 5/4/18	10:13	SK	72 hrs	0	0	0	0	0	0	0	0	0	0	0	10
L,1 4-30	Sat 5/5/18	9:24	MH	96 hrs	6	5	5	6	6	6	4	5	6	4	53	10
L,1 4-31	Sun 5/6/18	11:37	CM	120 hrs	15	13	9	14	11	12	13	12	14	7	120	10
L,1 4-32	Mon 5/7/18	16:09	CGM	144 hrs	0	11	8	0	9	10	12	10	0	7	67	10
	Tue 5/8/18	14:58	CGM	168 hrs	11	0	0	10	0	0	0	0	9	0	30	10
	Wed 5/9/18			192 hrs											0	
Total # of Young Produced:					32	29	22	30	26	28	29	27	29	18	Total Offspring at Renewal	Total Young Produced
															270	270

Test Acceptability Criteria:	Survival ≥ 80%?	≥ 15 neonates/female?	≥ 80% 3rd brood?	Is repro CV < 40%?	Control Valid?	
	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
	X	X	X	X	X	X

Description of Sample Being Analyzed Below:				0.05 Reference Toxicant May 2018											KCI	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 2	B: 1	C: 6	D: 3	E: 2	F: 4	G: 6	H: 2	I: 3	J: 5			
	Tue 5/1/18	14:57	CGM	Initiation	0	0	0	0	0	0	0	0	0	0	0	10
	Wed 5/2/18	11:00	PB/CGM	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Thu 5/3/18	10:16	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Fri 5/4/18	10:18	SK	72 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Sat 5/5/18	9:29	MH	96 hrs	6	7	4	6	6	7	5	5	8	6	60	10
	Sun 5/6/18	11:41	CM	120 hrs	15	10	13	13	12	15	7	12	9	13	119	10
	Mon 5/7/18	16:14	CGM	144 hrs	11	9	0	7	6	6	0	6	0	0	45	10
	Tue 5/8/18	15:07	CGM	168 hrs	0	10	8	0	0	0	10	0	13	11	52	10
	Wed 5/9/18			192 hrs											0	
Total # of Young Produced:					32	36	25	26	24	28	22	23	30	30	Total Offspring at Renewal	Total Young Produced
															276	276

Comments:

*Continuation of previous brood CM 5-10-18

38 of 62

May 2018 Reference Toxicant Test

L #: Potassium Chloride

Description of Sample Being Analyzed Below:				0.1 Reference Toxicant May 2018											KCI	
Set-up & Transfer Data		Analyst		Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time			A: 3	B: 7	C: 5	D: 1	E: 3	F: 1	G: 5	H: 5	I: 6	J: 3			
Tue 5/1/18	14:57	CGM	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Wed 5/2/18	11:04	PB/CGM	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Thu 5/3/18	10:20	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Fri 5/4/18	10:20	SK	72 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Sat 5/5/18	9:31	MH	96 hrs	8	5	6	5	5	7	6	7	6	6	61	10	
Sun 5/6/18	11:48	CM	120 hrs	13	10	11	10	13	11	11	11	15	13	118	10	
Mon 5/7/18	16:20	CGM	144 hrs	8	7	0	8	0	10	0	6	9	8	56	10	
Tue 5/8/18	15:27	CGM	168 hrs	0	0	9	0	11	0	10	0	0	0	30	10	
Wed 5/9/18			192 hrs											0		
Total # of Young Produced:				29	22	26	23	29	28	27	24	30	27	Total Offspring at Renewal	Total Young Produced	
														265	265	

Description of Sample Being Analyzed Below:				0.2 Reference Toxicant May 2018											KCI	
Set-up & Transfer Data		Analyst		Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time			A: 4	B: 2	C: 4	D: 2	E: 6	F: 5	G: 7	H: 3	I: 2	J: 4			
Tue 5/1/18	14:57	CGM	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Wed 5/2/18	11:07	PB/CGM	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Thu 5/3/18	10:23	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Fri 5/4/18	10:23	SK	72 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Sat 5/5/18	9:24	MH	96 hrs	5	5	4	8	7	8	6	5	6	5	59	10	
Sun 5/6/18	11:54	CM	120 hrs	13	14	5	12	13	12	9	14	11	13	116	10	
Mon 5/7/18	16:26	CGM	144 hrs	0	0	5	12	11	8	10	8	0	11	65	10	
Tue 5/8/18	15:34	CGM	168 hrs	12	10	12*	0	0	0	0	0	9	0	43	10	
Wed 5/9/18			192 hrs											0		
Total # of Young Produced:				30	29	26	32	31	28	25	27	26	29	Total Offspring at Renewal	Total Young Produced	
														283	283	

*X = indicates dead daphnid; death is confirmed by observation (no appendage movement and no visible heartbeat)

Comments:

*Continuation of previous brood CM 5-10-18

May 2018
Reference Toxicant Test

L #: Potassium Chloride

Description of Sample Being Analyzed Below:				0.4 Reference Toxicant May 2018										KCI		
Set-up & Transfer Data		Analyst		Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time			A: 5	B: 3	C: 7	D: 5	E: 1	F: 6	G: 2	H: 1	I: 4	J: 6			
Tue 5/1/18	14:57	CGM	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Wed 5/2/18	11:10	PB/CGM	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Thu 5/3/18	10:25	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Fri 5/4/18	10:25	SK	72 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Sat 5/5/18	9:36	MH	96 hrs	2	0 X	0 ME	2 ME	0	4	4	4	3	0	19	9	
Sun 5/6/18	11:58	CM	120 hrs	4	-	2	6	7	10	6	4	5	2	46	9	
Mon 5/7/18	16:31	CGM	144 hrs	0	-	0	0	0	6	6	4	0	0	16	9	
Tue 5/8/18	15:47	CGM	168 hrs	3 ME	-	6	10	7	0	0	0	6	5	37	9	
Wed 5/9/18			192 hrs		-									0		
Total # of Young Produced:				9	0	8	18	14	20	16	12	14	7	Total Offspring at Renewal	Total Young Produced	
														118	118	

Description of Sample Being Analyzed Below:				0.8 Reference Toxicant May 2018										KCI	
Set-up & Transfer Data		Analyst		Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time			A: 6	B: 4	C: 3	D: 7	E: 5	F: 2	G: 1	H: 4	I: 7	J: 7		
Tue 5/1/18	14:57	CGM	initiation	0	0	0	0	0	0	0	0	0	0	0	10
Wed 5/2/18	11:20	PB/CGM	24 hrs	0 X	0 X	0 X	0 X	0 X	0 X	0	0 X	0 X	0 X	0	1
Thu 5/3/18	10:30	NY	48 hrs	-	-	-	-	-	-	0	-	-	-	0	1
Fri 5/4/18	10:27	SK	72 hrs	-	-	-	-	-	-	0 X	-	-	-	0	0
Sat 5/5/18			96 hrs	-	-	-	-	-	-	-	-	-	-	0	
Sun 5/6/18			120 hrs	-	-	-	-	-	-	-	-	-	-	0	
Mon 5/7/18			144 hrs	-	-	-	-	-	-	-	-	-	-	0	
Tue 5/8/18			168 hrs	-	-	-	-	-	-	-	-	-	-	0	
Wed 5/9/18			192 hrs	-	-	-	-	-	-	-	-	-	-	0	
Total # of Young Produced:				0	0	0	0	0	0	0	0	0	0	Total Offspring at Renewal	Total Young Produced
														0	0

"X" = indicates dead daphnid; death is confirmed by observation (no appendage movement and no visible heartbeat)

Comments:

May 2018
Reference Toxicant Test

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

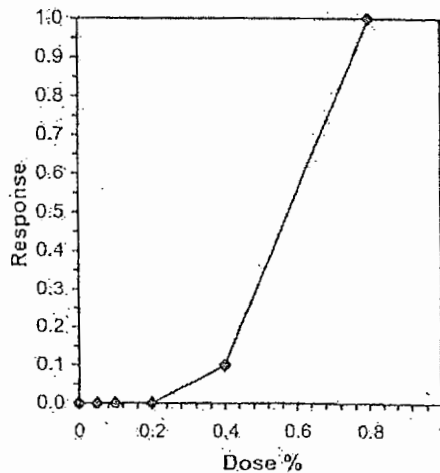
Start Date: 5/1/2018	Test ID: KCI	Sample ID: Potassium Chloride
End Date: 5/8/2018	Lab ID: ESC Lab Sciences	Sample Type: EFF1-POTW
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Reference Toxicant May 2018		

Conc-%	1	2	3	4	5	6	7	8	9	10
B-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.05	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.4	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Conc-%	Transform: Arcsin Square Root							Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
B-Control	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	1.0000	1.0000
0.05	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	1.0000	1.0000
0.1	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	1.0000	1.0000
0.2	1.0000	1.0000	1.0472	1.0472	1.0472	0.000	10	1.0000	1.0000
0.4	0.9000	0.9000	0.9948	0.5236	1.0472	16.644	10	0.9000	0.9000
0.8	0.0000	0.0000	0.5236	0.5236	0.5236	0.000	10	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.30293	0.93	-6.1489	41.7311
Equality of variance cannot be confirmed				

Point	%	SD	Linear Interpolation (200 Resamples)		
			95% CL	Skew	
IC05	0.3000	0.0694	0.2333	0.4200	0.5337
IC10	0.4000	0.0597	0.2667	0.4400	-0.6784
IC15	0.4222	0.0491	0.3000	0.4600	-0.7331
IC20	0.4444	0.0395	0.3333	0.4800	-0.9679
IC25	0.4667	0.0363	0.3667	0.5000	-0.8965
IC40	0.5333	0.0285	0.4571	0.5600	-0.8155
IC50	0.5778	0.0237	0.5143	0.6000	-0.8155



May 2018 Reference Toxicant Test

Ceriodaphnia Survival and Reproduction Test-Reproduction

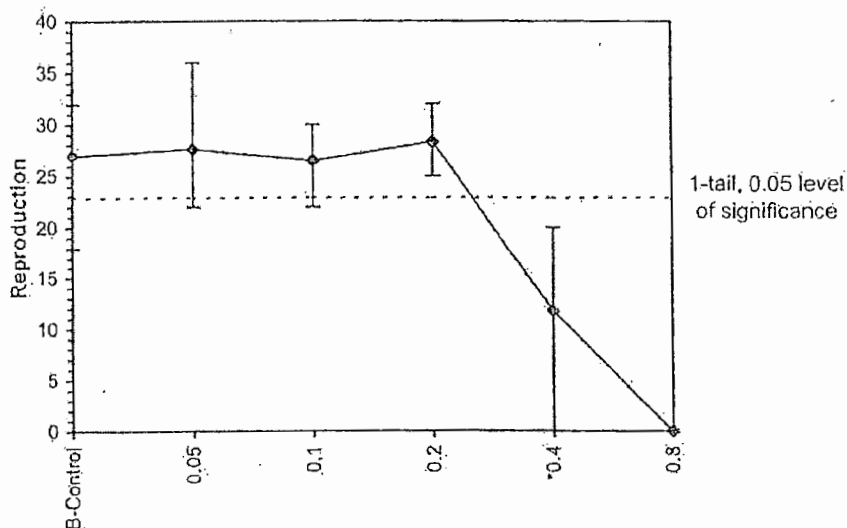
Start Date: 5/1/2018	Test ID: KCI	Sample ID: Potassium Chloride
End Date: 5/8/2018	Lab ID: ESC Lab Sciences	Sample Type: EFF1-POTW
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Reference Toxicant May 2018		

Conc-%	1	2	3	4	5	6	7	8	9	10
B-Control	32.000	29.000	22.000	30.000	26.000	28.000	29.000	27.000	29.000	18.000
0.05	32.000	36.000	25.000	26.000	24.000	28.000	22.000	23.000	30.000	30.000
0.1	29.000	22.000	26.000	23.000	29.000	28.000	27.000	24.000	30.000	27.000
0.2	30.000	29.000	26.000	32.000	31.000	28.000	25.000	27.000	26.000	29.000
0.4	9.000	0.000	8.000	18.000	14.000	20.000	16.000	12.000	14.000	7.000
0.8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Conc-%	Mean	N-Mean	Transform: Untransformed				N	1-Tailed		
			Mean	Min	Max	CV%		t-Stat	Critical	MSD
B-Control	27.000	1.0000	27.000	18.000	32.000	15.321	10			
0.05	27.600	1.0222	27.600	22.000	36.000	16.041	10	-0.326	2.223	4.093
0.1	26.500	0.9815	26.500	22.000	30.000	10.258	10	0.272	2.223	4.093
0.2	28.300	1.0481	28.300	25.000	32.000	8.169	10	-0.706	2.223	4.093
0.4	11.800	0.4370	11.800	0.000	20.000	50.343	10	8.256	2.223	4.093
0.8	0.000	0.0000	0.000	0.000	0.000	0.000	10			

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97428	0.93	-0.4562	0.88504
Bartlett's Test indicates equal variances (p = 0.05)	9.4399	13.2767		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Dunnell's Test	0.2	0.4	0.28284	500
Treatments vs B-Control	MSDu	MSDp	MSB	MSE
	4.09319	0.1516	488.13	16.9467
	F-Prob	df		
	6.7E-12	4, 45		

Dose-Response Plot



May 2018 Reference Toxicant Test

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date: 5/1/2018	Test ID: KCI	Sample ID: Potassium Chloride
End Date: 5/8/2018	Lab ID: ESC Lab Sciences	Sample Type: EFF1-POTW
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Reference Toxicant May 2018		

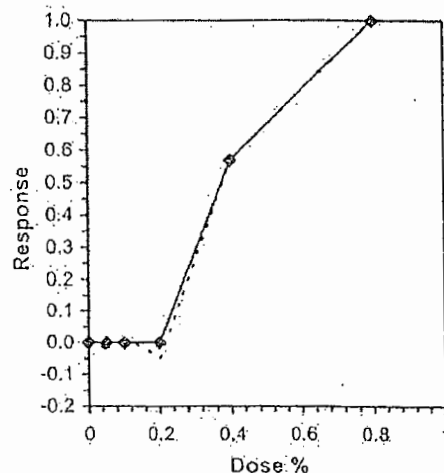
Conc-%	1	2	3	4	5	6	7	8	9	10
B-Control	32.000	29.000	22.000	30.000	26.000	28.000	29.000	27.000	29.000	18.000
0.05	32.000	36.000	25.000	26.000	24.000	28.000	22.000	23.000	30.000	30.000
0.1	29.000	22.000	26.000	23.000	29.000	28.000	27.000	24.000	30.000	27.000
0.2	30.000	29.000	26.000	32.000	31.000	28.000	25.000	27.000	26.000	29.000
0.4	9.000	0.000	8.000	18.000	14.000	20.000	16.000	12.000	14.000	7.000
0.8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Conc-%	Transform: Untransformed							Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
B-Control	27.000	1.0000	27.000	18.000	32.000	15.321	10	27.350	1.0000
0.05	27.600	1.0222	27.600	22.000	36.000	16.041	10	27.350	1.0000
0.1	26.500	0.9815	26.500	22.000	30.000	10.258	10	27.350	1.0000
0.2	28.300	1.0481	28.300	25.000	32.000	8.169	10	27.350	1.0000
0.4	11.800	0.4370	11.800	0.000	20.000	50.343	10	11.800	0.4314
0.8	0.000	0.0000	0.000	0.000	0.000	0.000	10	0.000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.97428	0.93	-0.4562	0.88504
Bartlett's Test indicates equal variances (p = 0.05)	9.4399	13.2767		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05	0.2176	0.0511	0.0423 0.2206	-2.3474
IC10	0.2352	0.0085	0.2104 0.2413	-0.6139
IC15	0.2528	0.0090	0.2287 0.2632	-0.2199
IC20	0.2704	0.0099	0.2457 0.2851	0.0148
IC25	0.2879	0.0111	0.2624 0.3064	0.1241
IC40	0.3407	0.0158	0.3090 0.3720	0.1944
IC50	0.3759	0.0210	0.3391 0.4261	0.5602



May 2018 Reference Toxicant Test



Datasheet printed by: _____

Control Water (Tank ID): F040418

Control Water (Begin Use Date): 4-10-18

Pimephales promelas 48-hr Acute Reference Toxicant Test

Month of: APRIL 2018

Test Start Date: 4-11-18

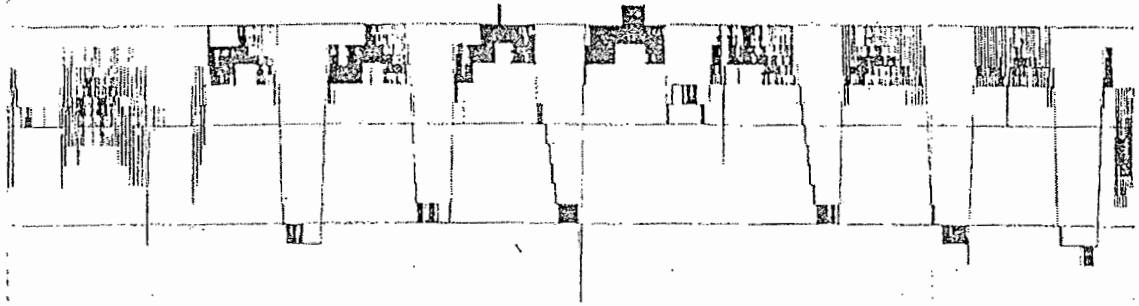
Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050063

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)		Analyst: <u>MS</u>	Analyst: <u>MS</u>	Analyst: <u>ZH</u>	Analyst: <u>CF</u>
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	<i>Pimephales promelas</i>	25.1 °C	24.1 °C	24.3 °C	24.1 °C
0.3	<i>Pimephales promelas</i>	25.0 °C	24.2 °C	24.3 °C	24.1 °C
0.6	<i>Pimephales promelas</i>	25.0 °C	24.4 °C	24.6 °C	24.1 °C
1.2	<i>Pimephales promelas</i>	24.8 °C	24.2 °C	24.7 °C	24.1 °C
2.4	<i>Pimephales promelas</i>	24.8 °C	24.2 °C	25.0 °C	— °C
4.8	<i>Pimephales promelas</i>	24.6 °C	24.2 °C	25.0 °C	— °C

Sample ID: *Pimephales promelas* 48-hr Acute Reference Toxicant Test



Ch	Name	Entvl. Sample	Cur.A	Cur.B	A-B	High	Low	Avg	Unit
1	CH1	2000	-----	-----	-----	25.6	24.1	25.1	°C
2	CH2	4000	-----	-----	-----	25.6	24.1	25.1	°C

Cur.A Date : 04/07/2018 21:19:55
 Cur.B Date : 04/07/2018 13:35:47
 Diff. A-B : 0 15:20'52.000

Data Range 04/07/2018 21:19:55-04/07/2018 13:35:47
 Calc Range 04/07/2018 22:32:59-04/18/2018 1:11:11

Work of 4-18-17
to 4-17-13

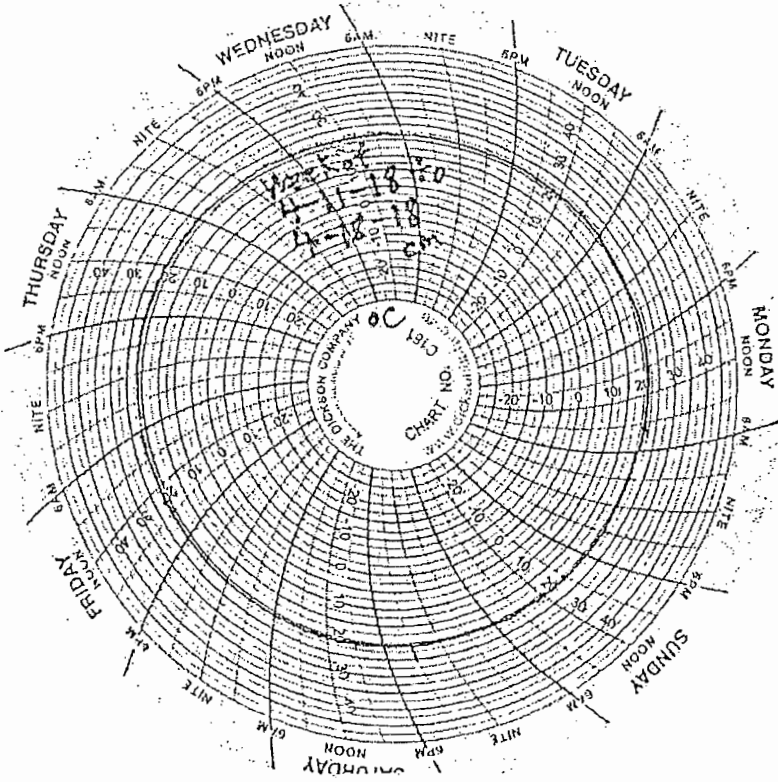


Chart Devices Used in
Thermo-Kool Walk-in Incubator
Dickson (small chart)



ACUTE TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow)

Client **Minnow 48-hr Acute Reference Toxicant Test**

Toxicant Used: potassium chloride

Month of:
April 2018

Begin 4-11-18
End 4-13-18

Time 14:20 *end test +/- 1 hr from start time
Time 13:22

Test Duration: 48 hours
Dilution Water: Moderately Hard SDW

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE Minnows		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	10	10	10
	B: 2	10	10	10
0.3	A: 2	10	10	10
	B: 1	10	10	10
0.6	A: 3	10	8	5
	B: 5	10	10	9
1.2	A: 4	10	0	0
	B: 3	10	1	0
2.4	A: 5	10	0	0
	B: 6	10	0	0
4.8	A: 6	10	0	0
	B: 4	10	0	0
Checked By: <u>JY/KH</u>	Biologist: <u>EH KH KL</u>	Time: <u>14:20 13:25 13:22</u>		

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs initial	final	0 hrs initial	final
8.0	8.0	8.2	7.5
8.0	7.8	8.4	7.4
8.0	7.7	8.0	7.2
8.0	7.7	7.7	7.1
	7.8	7.7	7.0
8.0	* 7.5	7.8	* 7.0
	7.6		6.70
7.9	* 7.5	7.9	* 6.80
7.9	7.5	8.0	6.80
Initial Readings By: <u>JY 14:00</u>			

Conductivity (umhos/cm)	
0 hrs initial	final
2473	2516
951	951
1401	1422
2614	2685
	2692
4620	* 4.620
	4.620
8665	* 8.440
8730	8.440
Final Readings By: <u>KH 14:05</u>	

* Final Readings Taken 04-13-18 AB

Lot # of KCl Stock Solution:
040318KCl

	Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	<0.2	43	65
4.8 Concentration	<0.2	37	61

L 984406-01
L 985072-01

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.

Minnows were 2 days old at test initiation and were taken from ESC Lot # 0404181413

Minnows were last fed 4/11/18 @ 11:07



Larval Fish Growth and Survival Test-48 Hr Survival

Start Date: 4/11/2018 Test ID: RTPP041118 Sample ID: REF-Ref Toxicant
 End Date: 4/13/2018 Lab ID: ESC Lab Sciences Sample Type: KCL-Potassium chloride
 Sample Date: Protocol: EPAF 94-EPA Freshwater Test Species: PP-Pimephales promelas
 Comments: Reference Toxicant Acute Minnow April 2018 (4-11-18)

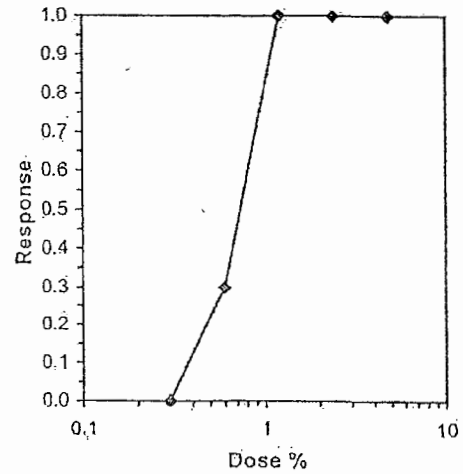
Conc-%	1	2
B-Control	1.0000	1.0000
0.3	1.0000	1.0000
0.6	0.5000	0.9000
1.2	0.0000	0.0000
2.4	0.0000	0.0000
4.8	0.0000	0.0000

Conc-%	Transform: Arcsin Square Root							Number Resp	Total Number
	Mean	N-Mean	Mean	Min	Max	CV%	N		
B-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
0.3	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
0.6	0.7000	0.7000	1.0172	0.7854	1.2490	32.230	2	6	20
1.2	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
2.4	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
4.8	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trim Level	EC50	95% CL	
0.0%	0.6892	0.5979	0.7944
5.0%	0.6986	0.5956	0.8195
10.0%	0.7077	0.5878	0.8520
20.0%	0.7234	0.5469	0.9569
Auto-0.0%	0.6892	0.5979	0.7944

AME 4-11-18





Datasheet printed by: SWS

Control Water (Tank ID): A050118

Control Water (Begin Use Date): 5-2-18

Pimephales promelas 48-hr Acute Reference Toxicant Test

Month of: May 2018

Test Start Date: 5-2-18

Toxicant: potassium chloride (KCl)

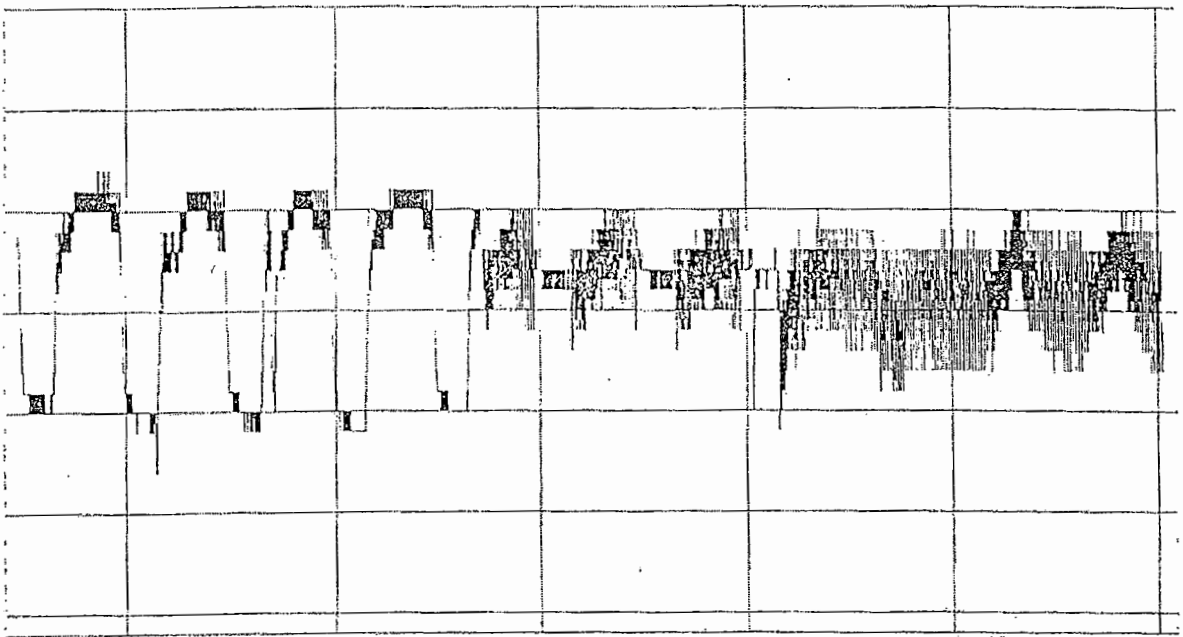
Thermometer Serial #: 18050063

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)		Analyst: <u>NJ</u>	Analyst: <u>NJ</u>	Analyst: <u>KH</u>	Analyst: <u>YK</u>
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	<i>Pimephales promelas</i>	24.3 °C	24.8 °C	24.6 °C	24.8 °C
0.3	<i>Pimephales promelas</i>	24.5 °C	24.8 °C	24.5 °C	24.7 °C
0.6	<i>Pimephales promelas</i>	24.5 °C	24.9 °C	24.5 °C	24.9 °C
1.2	<i>Pimephales promelas</i>	24.8 °C	24.9 °C	24.5 °C	24.8 °C
2.4	<i>Pimephales promelas</i>	25.1 °C	24.8 °C	24.4 °C	24.9 °C
4.8	<i>Pimephales promelas</i>	25.1 °C	24.8 °C	24.5 °C	24.9 °C

Sample ID: *Pimephales promelas* 48-hr Acute Reference Toxicant Test

May 2018
Reference Toxicant Test



ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.7	24.2	25.1	°C
2	Ch2	2min.	8000	-----	-----	-----	25.7	21.2	25.1	°C

Cur.A Date : 04/26/2018 19:21'52
 Cur.B Date : 05/09/2018 4:21'09
 diff. A-B : 11 09:02'17.000

Data Range 04/26/2018 19:21'52-05/09/2018 4:21'09
 Calc. Range 04/26/2018 22:33'50-05/08/2018 1:12'11

May 2018 Reference Toxicant Test

Week of 5-1-18
to 5-8-18

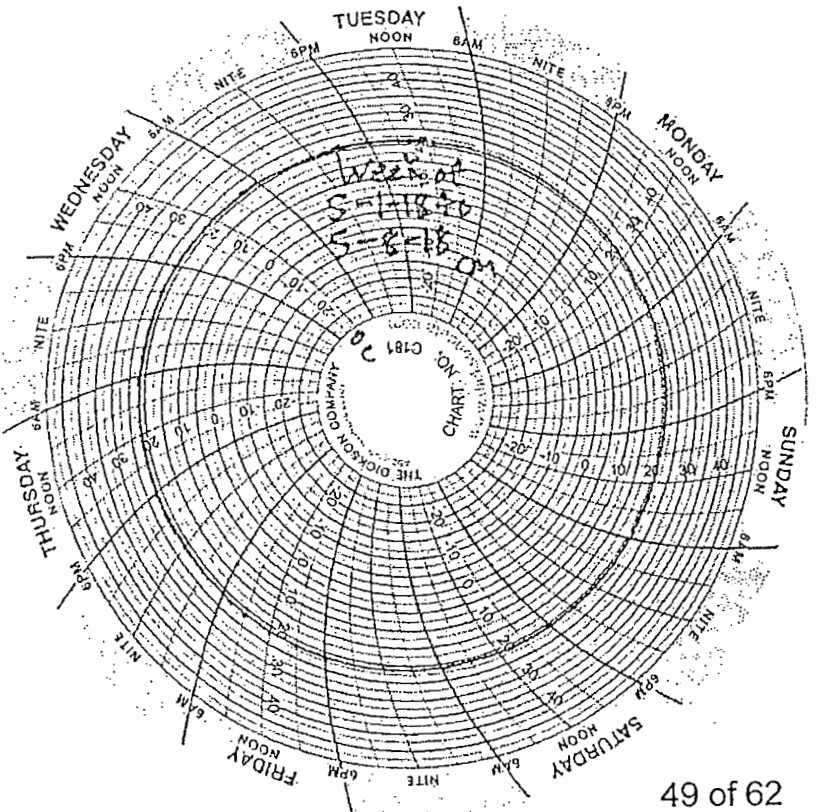


Chart Devices Used in
Thermo-Kool Walk-in Incubator

Dickson (small chart)



ACUTE TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow) *Violet*

Client **Minnow 48-hr Acute Reference Toxicant Test** Toxicant Used: potassium chloride
 Begin 5-2-18 Time 16:35 end test +/- 1 hr from start time
 End 5-4-18 Time 15:40 Test Duration: 48 hours
 Dilution Water: Moderately Hard SDW
 Month of: **May 2018**

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE Minnows		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	10	10	10
	B: 2	10	10	10
0.3	A: 2	10	10	10
	B: 3	10	10	10
0.6	A: 3	10	10	9
	B: 4	10	10	8
1.2	A: 4	10	0	0
	B: 5	10	1	0
2.4	A: 5	10	0	0
	B: 6	10	0	0
4.8	A: 6	10	0	0
	B: 7	10	0	0

Checked By: KH/144
 Biologist: NY P. J. / J.K.
 Time: 16:35 15:40 15:40

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
initial		initial	
8.0	7.9	7.80	7.6
initial		initial	
7.9	7.9	8.50	7.6
initial		initial	
7.9	7.9	8.50	7.6
initial		initial	
7.9	7.2	8.50	7.5
initial		initial	
7.8	7.8	5.50	7.90
	7.8		7.60
initial		initial	
7.8	7.8	7.90	7.50
7.9	7.8	8.00	7.50

Initial Readings By: FB 15:35
 Final Readings By: KH 16:19

May 2018 Reference Toxicant Test

Conductivity (umhos/cm)	
0 hrs	final
initial	
270.1	255.1
initial	
840	587
initial	
1,326	1,382
initial	
2,491	2,544
initial	
4,670	4,770
	4,710
initial	
8,950	9,030
8,950	9,030

	Total Cl ₂ (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	46	61
4.8 Concentration	< 0.2	41	61

* Final Readings Taken 5-3-18 FB
 L 990535-0
 L 990537-01
 L 990535-01

Lot # of KCl Stock Solution:
050118 KCl



50 of 62

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.
 Minnows were 2 days old at test initiation and were taken from ESC Lot # 043018HD.
 Minnows were last fed 5/2/18 @ 14:35.

Ceriodaphnia Survival and Reproduction Test-48 Hr Survival

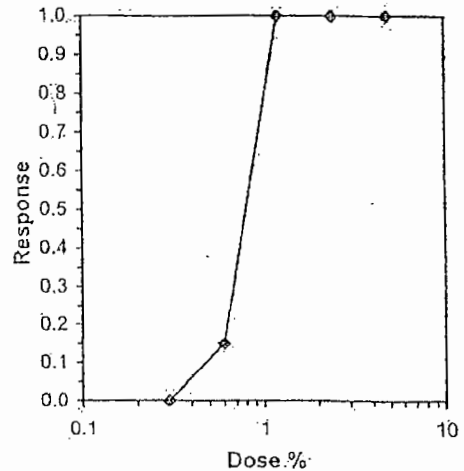
Start Date: 5/2/2018	Test ID: RTPP050218	Sample ID: REF-Ref Toxicant
End Date: 5/4/2018	Lab ID: ESC Lab Sciences	Sample Type: KCL-Potassium chloride
Sample Date:	Protocol: EPAF 94-EPA Freshwater	Test Species: CD-Ceriodaphnia dubia
Comments: Reference Toxicant Minnow Acute May 2018		

Conc-%	1	2
B-Control	1.0000	1.0000
0.3	1.0000	1.0000
0.6	0.9000	0.8000
1.2	0.0000	0.0000
2.4	0.0000	0.0000
4.8	0.0000	0.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Number Resp	Total Number
			Mean	Min	Max	CV%			
B-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
0.3	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
0.6	0.8500	0.8500	1.1781	1.1071	1.2490	8.517	2	3	20
1.2	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
2.4	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20
4.8	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trimmed Spearman-Kärber			
Trim Level	EC50	95% CL	
0.0%	0.7647	0.6846	0.8542
5.0%	0.7815	0.6865	0.8896
10.0%	0.7935	0.6707	0.9387
20.0%	0.7982	0.7393	0.8617
Auto-0.0%	0.7647	0.6846	0.8542



May 2018 Reference Toxicant Test

Reference Toxicant May 2018

NPDES #:

KCI

Date: May 1-8, 2018

Login #: Potassium Chloride

Tue 5/1/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	262.2	8.3	14:11:24	NY
Dup. Control	7.9	261.5	8.3	14:11:56	NY
0.1875	7.9	623	8.4	14:12:24	NY
Dup. 0.1875	7.9	623	8.4	14:12:34	NY
0.375	7.9	970	8.3	14:13:01	NY
Dup. 0.375	7.9	972	8.3	14:13:20	NY
0.75	7.9	1656	8.3	14:13:48	NY
Dup. 0.75	7.9	1644	8.3	14:14:05	NY
1.5	7.8	3102	8.3	14:14:30	NY
Dup. 1.5	7.8	3105	8.2	14:15:00	NY
3	7.8	5730	8	14:15:21	NY
Dup. 3	7.8	5730	8	14:15:40	NY

Comments

Control 9

Wed 5/2/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.7	255.4	9.1	9:15:35	PB
0.1875	7.3	533	9.3	9:16:40	PB
0.375	7.9	1000	9.3	9:17:23	PB
0.75	7.9	1717	9.2	9:17:45	PB
1.5	7.9	3180	9.1	9:18:30	PB
3	7.3	5970	9.9	9:19:15	PB

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.8	7.4	8:20:08	PB
Dup. Control	7.7	7.1	8:20:28	PB
0.1875	7.7	7.1	8:20:49	PB
Dup. 0.1875	7.5	7.1	8:21:16	PB
0.375	7.7	7.2	8:21:39	PB
Dup. 0.375	7.6	7.1	8:22:06	PB
0.75	7.6	7	8:22:55	PB
Dup. 0.75	7.6	6.3	8:23:15	PB
1.5	7.6	7.4	8:24:32	PB
Dup. 1.5	7.7	7.2	8:24:50	PB
3	7.5	7.1	8:25:11	PB
Dup. 3	7.6	7	8:25:30	PB

Thu 5/3/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8	260.4	9.8	9:43:06	JB
0.1875	7.9	634	10	9:43:25	JB
0.375	8	999	10.1	9:44:00	JB
0.75	7.9	1709	10	9:44:21	JB
1.5	/	/	/	/	JB
3	/	/	/	/	JB

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.8	7	8:36:39	JB
0.1875	7.7	7.2	8:37:19	JB
0.375	7.7	7.2	8:37:56	JB
0.75	7.7	7.4	8:38:42	JB
1.5	/	/	/	JB
3	/	/	/	JB

Fri 5/4/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8.2	248.9	10	10:05:14	KH
0.1875	8	626	10.1	10:05:57	KH
0.375	7.9	980	10.5	10:09:45	KH
0.75	7.9	1681	10.5	10:10:15	KH
1.5	/	/	/	/	KH
3	/	/	/	/	KH

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.9	7.8	8:45:27	KH
0.1875	7.8	7.8	8:46:00	KH
0.375	7.7	7.7	8:46:27	KH
0.75	7.7	7.6	8:47:07	KH
1.5	/	/	/	KH
3	/	/	/	KH

May 2018 Reference Toxicant Test

Reference Toxicant May 2018

NPDES #:

KCI

Date: May 1-8, 2018

Login #: Potassium Chloride

Sat 5/5/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8	256.9	10.1	8:58:14	KR
0.1875	7.8	627	10.1	9:01:16	KR
0.375	7.9	974	10.3	9:01:00	KR
0.75	7.9	1633	10.4	9:01:21	KR
1.5	/	/	/	/	KR
3	/	/	/	/	KR

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.9	7.1	8:13:17	KR
0.1875	7.8	7.1	8:13:53	KR
0.375	7.8	7.4	8:14:18	KR
0.75	7.8	7.5	8:15:23	KR
1.5	/	/	/	KR
3	/	/	/	KR

Sun 5/6/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	267	9	10:23:42	NY
0.1875	7.9	650	9.2	10:24:57	NY
0.375	7.8	1007	9.2	10:26:45	NY
0.75	7.8	1695	9.2	10:27:11	NY
1.5	/	/	/	/	NY
3	/	/	/	/	NY

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.9	7.7	8:42:03	JB
0.1875	7.9	7.9	8:42:44	JB
0.375	7.8	7.7	8:43:12	JB
0.75	7.8	7.5	8:43:52	JB
1.5	/	/	/	JB
3	/	/	/	JB

Mon 5/7/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.4	261.5	9.2	10:42:23	NY
0.1875	7.6	632	9.4	10:43:16	NY
0.375	7.6	972	9.4	10:43:36	NY
0.75	7.6	1655	9.4	10:44:21	NY
1.5	/	/	/	/	NY
3	/	/	/	/	NY

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	8	7.6	8:36:37	JB
0.1875	7.9	7.7	8:36:59	JB
0.375	7.8	7.6	8:37:23	JB
0.75	7.8	7.5	8:37:59	JB
1.5	/	/	/	JB
3	/	/	/	JB

Tue 5/8/18

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.9	8	8:32:52	CN
0.1875	7.8	7.9	8:33:38	CN
0.375	7.8	7.8	8:34:15	CN
0.75	7.8	7.8	8:35:34	CN
1.5	/	/	/	CN
3	/	/	/	CN

Initials

	pH		Conductivity		DO	
	range	mean	range	mean	range	mean
Control	7.4-8.1	7.9	248.9-287	259	8.1-10.1	9.2
0.1875	7.6-8	7.9	623-650	631	8.3-10.1	9.4
0.375	7.6-8	7.9	970-1007	984	8.3-10.5	9.4
0.75	7.6-7.9	7.9	1544-1717	1680	8.3-10.5	9.4
1.5	7.3-7.9	7.8	3102-3180	3129	8.2-9.7	8.6
3	7.8-2.8	7.8	5730-5970	5810	8.4-9	8.6

Finals

Pimephales promelas (fathead minnow)

	pH		DO	
	range	mean	range	mean
Control	7.7-8	7.9	7.8	7.5
0.1875	7.6-7.9	7.8	7.1-7.9	7.5
0.375	7.6-7.8	7.7	7.1-7.8	7.5
0.75	7.5-7.8	7.7	6.8-7.8	7.4
1.5	7.6-7.7	7.7	7.2-7.4	7.3
3	7.5-7.6	7.5	7-7.1	7.1

May 2018 Reference Toxicant Test

Pimephales promelas (fathead minnow)

Reference Toxicant May 2018

Toxicant: potassium chloride (KCl) Test Date: May 1-8, 2018

Reference Toxicant Control

L# of Control	Control Water Tank ID	Begin Use Date	Alkalinity (mg/L)	Hardness (mg/L)
L990142-05	L 043018	Tue 5/1/18	46	59
L990142-06	L 043018	Tue 5/1/18	45	62

Reference Toxicant (KCl Stock Solution)	Begin Use Date	Alkalinity (mg/L)	Hardness (mg/L)	L# of 3% KCl
	Tue 5/1/18	45	60	L990530-01

Lot #. of KCl Stock Solution used: 050118KCl



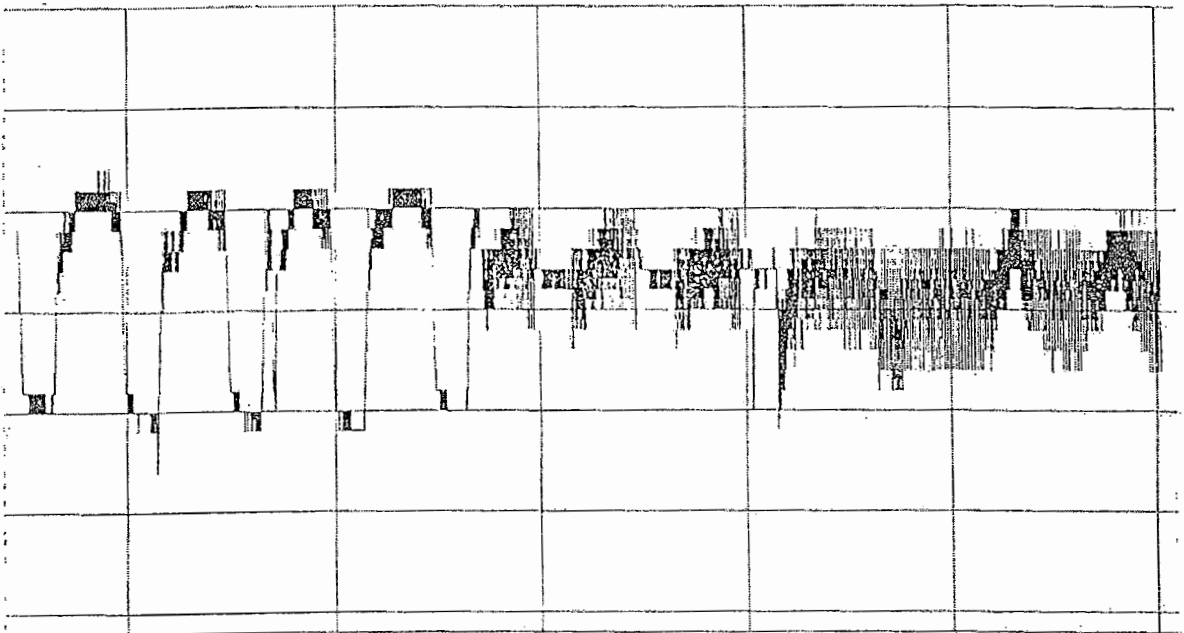
Temperature *Pimephales promelas* (measurement taken in test chambers)

	Tue 5/1/18	Wed 5/2/18		Thu 5/3/18		Fri 5/4/18		Sat 5/5/18		Sun 5/6/18		Mon 5/7/18		Tue 5/8/18
	Analyst		Analyst		Analyst		Analyst		Analyst		Analyst		Analyst	
	NY	NY	PB	NY	NY	KR	SK	MH	MH	NY	CM	NY	CM	NY
Control	25.5°C	24.5°C	25.7°C	25.0°C	24.1°C	24.8°C	24.9°C	24.5°C	25.5°C	24.6°C	25.7°C	24.3°C	24.3°C	24.5°C
0.1875	25.5°C	24.5°C	25.9°C	24.1°C	24.2°C	24.7°C	24.6°C	24.6°C	25.8°C	24.0°C	25.8°C	24.3°C	24.3°C	24.4°C
0.375	25.6°C	24.5°C	25.8°C	25.1°C	24.4°C	24.8°C	24.6°C	24.5°C	25.4°C	6.0°C	25.8°C	24.3°C	24.3°C	24.5°C
0.75	25.6°C	24.4°C	25.8°C	25.1°C	24.6°C	24.8°C	24.3°C	24.5°C	25.6°C	24.3°C	25.8°C	24.4°C	24.3°C	24.6°C
1.5	25.7°C	24.5°C	/	/	/	/	/	/	/	/	/	/	/	/
3	25.8°C	24.6°C	/	/	/	/	/	/	/	/	/	/	/	/
	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)

Thermometer serial number: 87870092

Reference Toxicant May 2018

May 2018
Reference Toxicant Test



Ch Name	Incr	Sample	Cur.A	Cur.B	AC->B	High	Low	Avg	Unit
1—Ch1	2min.	8000	---	---	---	25.7	21.2	25.1	°C
2—Ch2	2min.	8000	---	---	---	25.7	21.2	25.1	°C

Cur.A Date : 04/26/2019 19:21:53
 Cur.B Date : 05/03/2019 4:24:09
 diff. A-B : 11'09:02'17.000

Data Range 04/26/2019 19:21:53-05/03/2019 4:24:09
 Calc. Range 04/26/2019 22:33:50-05/03/2019 1:12:11

May 2018 Reference Toxicant Test

Week of 5-1-18
to 5-8-18

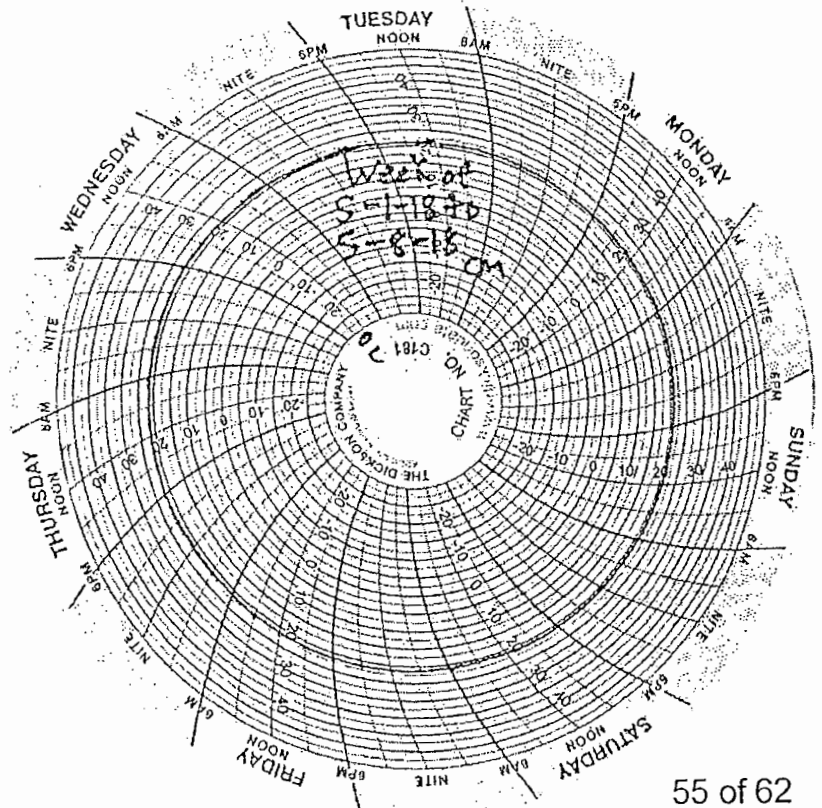


Chart Devices Used in
Thermo-Kool Walk-in Incubator

Dickson (small chart)



TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow) 7-Day Survival & Weight Data

Reference Toxicant May 2018

Test Date: May 1-8, 2018

NPDES #: KCI

Sample Distribution		NUMBER OF SURVIVORS							
Day of the Week and Date		Sample #1 Tues/Wed		Sample #2 Thurs/Fri		Sample #3 Sat/Sun/Mon			
Effluent Conc. in%	ID of Rep:	Tue 5/1/18 0 hours	Wed 5/2/18 24 hours	Thu 5/3/18 48 hours	Fri 5/4/18 72 hours	Sat 5/5/18 96 hours	Sun 5/6/18 120 hours	Mon 5/7/18 144 hours	Tue 5/8/18 168 hours
Control 9	A: 1	10	10	10	10	10	10	10	10
	B: 2	10	10	10	10	10	10	10	10
	C: 3	10	10	10	10	10	10	10	10
	D: 6	10	8	8	8	8	8	8	8
0.1875	A: 2	10	10	10	10	10	10	10	10
	B: 3	10	10	10	10	10	10	10	10
	C: 4	10	9	9	9	9	9	9	9
	D: 5	10	10	10	10	10	10	10	10
0.375	A: 3	10	8	8	8	8	8	8	8
	B: 4	10	10	10	10	10	10	10	10
	C: 1	10	10	10	10	10	10	10	10
	D: 4	10	7	7	7	7	7	7	7
0.75	A: 4	10	7	6	6	6	5	5	3
	B: 5	10	6	6	6	6	6	6	4
	C: 6	10	4	4	4	4	1	1	1
	D: 3	10	8	8	8	8	3	3	2
1.5	A: 5	10	0	0	0	0	0	0	0
	B: 6	10	0	0	0	0	0	0	0
	C: 2	10	0	0	0	0	0	0	0
	D: 2	10	0	0	0	0	0	0	0
3	A: 6	10	0	0	0	0	0	0	0
	B: 1	10	0	0	0	0	0	0	0
	C: 5	10	0	0	0	0	0	0	0
	D: 1	10	0	0	0	0	0	0	0
Initials of Analyst Checking Survival		NY	PB/JB	NY	SK	MH	CM	CM	PB/CM
Time that Minnows were Examined		16:08	10:42	10:43	10:39	9:48	11:15	11:30	11:47
Carton used to divide sample		L,J 4-30	L,J 4-30	L,J 4-30	L,J 4-30	L,J 4-30	L,J 4-31	L,J 4-32	

WEIGHT DATA for SURVIVING MINNOWS							
	Weight Empty Boat (mg)	Boat w/ Fish (mg)	Weight of Larvae (mg)	Mean Weight of Larvae (mg)	Total of Mean	Mean per Concentration	
Control	A	1309.25	1312.92	3.67	0.367	1.5360	0.3840
	B	1305.81	1309.28	3.47	0.347		
	C	1310.69	1314.95	4.26	0.426		
	D	1311.58	1315.54	3.96	0.396		
0.1875	A	1305.38	1308.63	3.25	0.325	1.4110	0.3527
	B	1295.24	1298.46	3.22	0.322		
	C	1303.18	1307.34	4.16	0.416		
	D	1291.04	1294.52	3.48	0.348		
0.375	A	1306.98	1309.73	2.75	0.275	1.2990	0.3247
	B	1299	1302.61	3.61	0.361		
	C	1290.45	1294.02	3.57	0.357		
	D	1308.9	1309.96	3.06	0.306		
0.75	A	1313.88	1314.98	1.1	0.11	0.3560	0.0890
	B	1305.35	1306.63	1.28	0.128		
	C	1304	1304.37	0.37	0.037		
	D	1316.76	1317.57	0.81	0.081		
1.5	A			#VALUE!		#####	#####
	B			#VALUE!			
	C			#VALUE!			
	D			#VALUE!			
3	A			#VALUE!		#####	#####
	B			#VALUE!			
	C			#VALUE!			
	D			#VALUE!			
Analyst:		PB					

COMMENTS: Minnows used in this test are from ESC Lot#

043018HD Minnows were hatched on

4/30/2018

Survival ≥ 80%?

YES NO
X

≥ 0.25mg Average Weight in Surviving Controls?

YES NO
X

Is (growth) CV < 40%?

YES NO
X

Control Valid?

YES NO
X

56 of 62

**May 2018
Reference Toxicant Test**

Date & Time Put in Oven	Date & Time Removed
05-08-18 @ 11:47	5-9-18 @ 13:51

Oven Temp:	71°C	Oven Temp:	74°C
------------	------	------------	------

Analyst:	PB	Analyst:	JB
----------	----	----------	----

Login #: Potassium Chloride

Larval Fish Growth and Survival Test-7 Day Survival

Start Date: 5/1/2018 Test ID: KCI Sample ID: Potassium Chloride
 End Date: 5/8/2018 Lab ID: ESC Lab Sciences Sample Type: EFF1-POTW
 Sample Date: Protocol: EPAF 94-EPA Freshwater Test Species: PP-Pimephales promelas
 Comments: Reference Toxicant May 2018

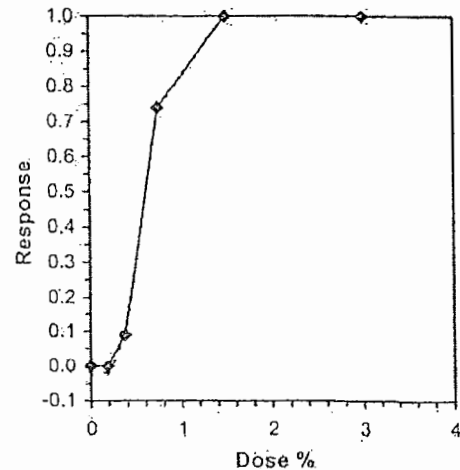
Conc-%	1	2	3	4
B-Control	1.0000	1.0000	1.0000	0.8000
0.1875	1.0000	1.0000	0.9000	1.0000
0.375	0.8000	1.0000	1.0000	0.7000
0.75	0.3000	0.4000	0.1000	0.2000
1.5	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					Isotonic	
			Mean	Min	Max	CV%	N	Mean	N-Mean
B-Control	0.9500	1.0000	1.3358	1.1071	1.4120	11.411	4	0.9625	1.0000
0.1875	0.9750	1.0263	1.3713	1.2490	1.4120	5.942	4	0.9625	1.0000
0.375	0.8750	0.9211	1.2306	0.9912	1.4120	17.454	4	0.8750	0.9091
0.75	0.2500	0.2632	0.5124	0.3218	0.6847	30.428	4	0.2500	0.2597
1.5	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4	0.0000	0.0000
3	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	4	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution ($p > 0.01$)	0.9011	-0.844	-0.4703	-0.9912
Bartlett's Test indicates equal variances ($p = 0.54$)	2.17848	11.3449		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	0.2906	0.0692	0.1256	0.4685
IC10	0.3803	0.0527	0.1888	0.4576
IC15	0.4091	0.0398	0.2495	0.4864
IC20	0.4380	0.0339	0.2972	0.5172
IC25	0.4669	0.0315	0.3480	0.5469
IC40	0.5535	0.0272	0.4649	0.6311
IC50	0.6113	0.0270	0.5212	0.6893



May 2018 Reference Toxicant Test

Larval Fish Growth and Survival Test-7 Day Biomass

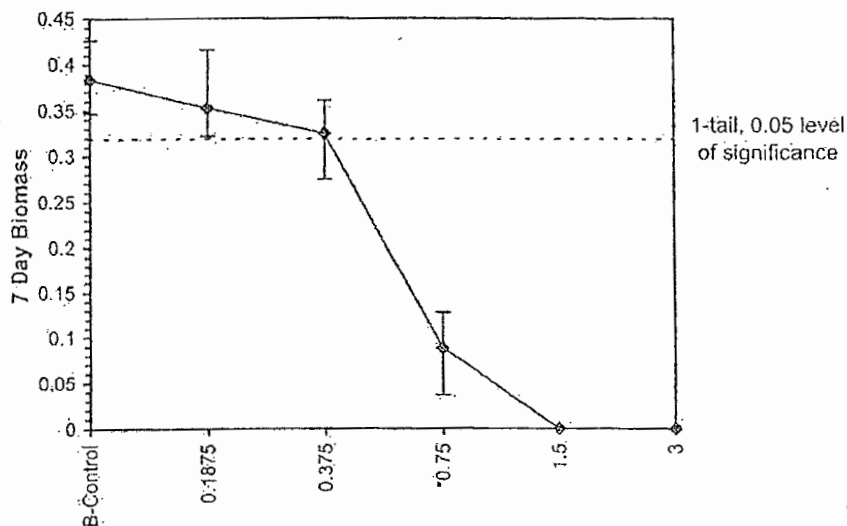
Start Date: 5/1/2018 Test ID: KCI Sample ID: Potassium Chloride
 End Date: 5/8/2018 Lab ID: ESC Lab Sciences Sample Type: EFF1-POTW
 Sample Date: Protocol: EPAF 94-EPA Freshwater Test Species: PP-Pimephales promelas
 Comments: Reference Toxicant May 2018

Conc-%	1	2	3	4
B-Control	0.3670	0.3470	0.4260	0.3960
0.1875	0.3250	0.3220	0.4160	0.3480
0.375	0.2750	0.3610	0.3570	0.3060
0.75	0.1100	0.1280	0.0370	0.0810
1.5	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000

Conc-%	Mean	N-Mean	Transform: Untransformed				N	1-Tailed		
			Mean	Min	Max	CV%		t-Stat	Critical	MSD
B-Control	0.3840	1.0000	0.3840	0.3470	0.4260	8.978	4			
0.1875	0.3527	0.9186	0.3527	0.3220	0.4160	12.399	4	1.104	2.290	0.0648
0.375	0.3247	0.8457	0.3247	0.2750	0.3610	12.796	4	2.094	2.290	0.0648
*0.75	0.0890	0.2318	0.0890	0.0370	0.1280	44.615	4	10.426	2.290	0.0648
1.5	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4			
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4			

Auxiliary Tests:	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9494	0.844	0.1689	-1.1914
Bartlett's Test indicates equal variances (p = 0.98)	0.15839	11.3449		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Dunnett's Test	0.375	0.75	0.53033	266.667
Treatments vs B-Control	MSDu	MSDp	MSB	MSE
	0.0648	0.16874	0.07248	0.0016
	F-Prob	df		
	8.1E-07	3, 12		

Dose-Response Plot



May 2018 Reference Toxicant Test

Larval Fish Growth and Survival Test-7 Day Biomass

Start Date: 5/1/2018 Test ID: KCI Sample ID: Potassium Chloride
 End Date: 5/8/2018 Lab ID: ESC Lab Sciences Sample Type: EFF1-POTW
 Sample Date: Protocol: EPAF 94-EPA Freshwater Test Species: PP-Pimephales promelas
 Comments: Reference Toxicant May 2018

Conc-%	1	2	3	4
B-Control	0.3670	0.3470	0.4260	0.3960
0.1875	0.3250	0.3220	0.4160	0.3480
0.375	0.2750	0.3610	0.3570	0.3060
0.75	0.1100	0.1280	0.0370	0.0810
1.5	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000

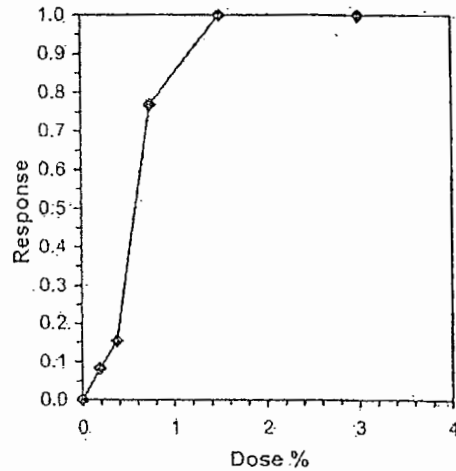
Conc-%	Transform: Untransformed							Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
B-Control	0.3840	1.0000	0.3840	0.3470	0.4260	8.978	4	0.3840	1.0000
0.1875	0.3527	0.9186	0.3527	0.3220	0.4160	12.399	4	0.3527	0.9186
0.375	0.3247	0.8457	0.3247	0.2750	0.3610	12.796	4	0.3247	0.8457
0.75	0.0890	0.2318	0.0890	0.0370	0.1280	44.615	4	0.0890	0.2318
1.5	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	4	0.0000	0.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9494	0.844	0.1689	-1.1914
Bartlett's Test indicates equal variances (p = 0.98)	0.15839	11.3449		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05*	0.1152	0.0829	0.0136	0.4944
IC10	0.2354	0.0924	0.0242	0.5007
IC15	0.3640	0.0827	0.0298	0.4695
IC20	0.4029	0.0534	0.1488	0.4903
IC25	0.4335	0.0367	0.2854	0.5182
IC40	0.5251	0.0268	0.4271	0.5953
IC50	0.5862	0.0244	0.5005	0.6578

* indicates IC estimate less than the lowest concentration



May 2018 Reference Toxicant Test

Poly Environmental Corp. Env. Lab

PQ Box 837
Dothan, AL 36303

Billing Information:
Mr. Steve Davis
P. O. Box 837
Dothan, AL 36303

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



12005 Lebanon Rd
Montgomery, TN 37127
Phone: 615-756-5858
Phone: 800-743-5859
Fax: 615-756-5858



L# **L993780**

Table #

Account: POLYENV

Template: T97971

Prologis: P650465

TSR: 702 - Cassandra Foster

PA: **4/30 uee**

Shipped Via: FedEX Ground

Report to:
Mr. Steve Davis

Email To: sdavis@polyengineering.com;
emurphree@polyengineering.com

Project Description: **Headland STP Biomon**

City/State Collected: **HOLAND ALABAMA**

Phone: 334-793-4700
Fax: 334-677-9477

Client Project #

Lab Project #
POLYENV-BIO HEADLAND

Collected by (print): **JAN SINGLET**

Site/Facility ID #
AL0027014

P.O. #

Collected by (signature): **[Signature]**

Rush? (Lab MUST Be Notified)

Quote #

Same Day ___ Pnd Day ___
Next Day ___ 5 Day (Add Only) ___
Two Day ___ 10 Day (Add Only) ___
Three Day ___

Date Results Needed

No. of

Packed on Ice: N ___ Y ___

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Concs	ALKBIO 12.5mlHDPE-NoPres	Biomonitoring 1L-HDPE-NoPres	HARD 250mlHDPE-HNO3									
SAMPLE 2		WW				5	X	X	X									
TOX DSAC01T-007 Comp	WW			5/15-16/18	10-10													

312450

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks: Sample #2 - Collect a 24hr composite sample from Tues-Wed (5/15-5/16). Ship sample to arrive at lab on Thursday 5/17/2018.

pH **7.1** Temp _____
Flow **150** Other _____

Sample Receipt Checklist
 Coc Seal Present/Intact: Y N
 CFC signed/accurate: Y N
 Bottles arrive intact: Y N
 Correct location used: Y N
 Sufficient volume sent: Y N
 IL Application: Y N
 Vot Zero Heapspace: Y N
 Preservation Correct/Checked: Y N

Samples returned via:
UPS ___ FedEx ___ Courier ___

Tracking # **413016735 7277**

Requisitioned by: (Signature) **[Signature]**

Date: **5/16/18** Time: **1056**

Received by: (Signature) **[Signature]**

Trip Blank Received: Yes/No
NCL/Meah

Requisitioned by: (Signature) **[Signature]**

Date: **5/16/18** Time: **1056**

Received by: (Signature) **[Signature]**

Temp: **20** °C
Bottles Received: **5**

If preservation required by Login: Date/Time



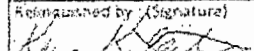
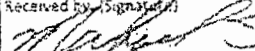
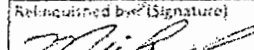

Requisitioned by: (Signature) **[Signature]**

Date: **5/17/18** Time: **847**

Received for lab by: (Signature) **[Signature]**

Date: **5/17/18** Time: **847**

Hold: _____ Condition: **NCF 1/OK**

Poly Environmental Corp. Env. Lab PO Box 837 Dothan, AL 36303		Billing information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303 Email: sdavis@polyengineering.com , emurphine@polyengineering.com		Pres CHK		Analysis / Container / Preservative										Chain of Custody Page 1 of 1			
Report to: Mr. Steve Davis		Project Description: Headland STP Biomon.		City/State Collected: Headland AL		Lab Project # POLYENV-BIO HEADLAND		P.O. #		Quote #		Date Results Needed		No. of Cntrs		 12105 Lathrop Rd Houston, TX 77022 Phone: 613-754-5454 Phone: 800-767-5454 Fax: 613-754-5454			
Phone: 334-793-4700 Fax: 334-677-9477		Client Project #		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Next Day <input type="checkbox"/> Two Day <input type="checkbox"/> Three Day <input type="checkbox"/> Five Day <input type="checkbox"/> 10 Day (Rad Only)		Matrix *		Depth		Date		Time		No. of Cntrs		L# 993720 D152			
Collected by (Print): Kevin Kilpatrick		Site/Facility ID # AL0027014		P.O. #		Quote #		Date Results Needed		No. of Cntrs		Accnum: POLYENV Template: T97972 Prelogin: P650466 TSR: 702 - Cassandra Foster PR: 4/30 use		Shipped Via: FedEX Ground					
Collected by (Signature): 		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Next Day <input type="checkbox"/> Two Day <input type="checkbox"/> Three Day <input type="checkbox"/> Five Day <input type="checkbox"/> 10 Day (Rad Only)		Matrix *		Depth		Date		Time		No. of Cntrs		Results		Sample # (Lab only)			
Immediately Packed on Ice: N <input type="checkbox"/> Y <input checked="" type="checkbox"/>		Sample ID		Comp/Grsb		Matrix *		Depth		Date		Time		No. of Cntrs		Results			
SAMPLE 3 DSNOBIT		WW		WW		5/17/18 5/18/18		9:00		6		X X X		X		C3			
Toxicity		grab		WW		5/17/18 5/18/18		9:00		6		X X X		X		C3			
* Matrix: SS - Sediment AIR - Air F - Filter GW - Groundwater B - Bioassay WW - Waste Water DW - Drinking Water OT - Other		Remarks: Sample #3 - Collect a 24hr composite sample from Thurs-Fri (5/17-5/18). Ship sample to arrive at lab on Saturday 5/19/2018. **Use SATURDAY Delivery Labels**		Samples returned via: UPS FedEx Courier		Tracking # A280 6818 485		pH Temp Flow 500 Other		Trip Blank Received: Yes/No HCL / MinOH TBA		Temp: 1.3°C Bottles Received: 6		If preservation required by Login, Date/Time		Hold:		Condition: NEF 1/OK	
Requisitioned by (Signature): 		Date: 5/17/18		Time: 9:12		Received by (Signature): 		Trip Blank Received: Yes/No HCL / MinOH TBA		Temp: 1.3°C Bottles Received: 6		If preservation required by Login, Date/Time		Hold:		Condition: NEF 1/OK			
Requisitioned by (Signature): 		Date: 5/18/18		Time: 0913		Received by (Signature):		Trip Blank Received: Yes/No HCL / MinOH TBA		Temp: 1.3°C Bottles Received: 6		If preservation required by Login, Date/Time		Hold:		Condition: NEF 1/OK			
Requisitioned by (Signature):		Date:		Time:		Received for lab by (Signature): 		Trip Blank Received: Yes/No HCL / MinOH TBA		Temp: 1.3°C Bottles Received: 6		If preservation required by Login, Date/Time		Hold:		Condition: NEF 1/OK			

62 of 62



12065 LEBANON RD.
 MT. JULIET, TN 37122
 (800) 767-5859
 WWW.ENVSCI.COM

September 7, 2018

Mr. Steve Davis
 Poly Environmental Corp - Headland STP
 PO Box 837
 Dothan, AL 36303

Biomonitoring Results
 ESC Lab Sciences Identification #: L1017169-01,-02,-03

Attached are the results for toxicity test performed: August 14-21, 2018

A summary of the findings is presented below:

Test Species	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>
EPA Method	EPA Method 1002.0	EPA Method 1000.0
Test Concentrations	100%	100%
Permit Limit (IWC)	100%	100%
Test Endpoint	AEC (Pass/Fail)	AEC (Pass/Fail)
Test Result	100% (PASS)	100% (PASS)
	successfully meets permit requirements for the period	successfully meets permit requirements for the period
Next Test Date	Week of November 11, 2018	
Comments	Poly Enterprise- Headland STP AL0027014	

If you have any questions or comments concerning the enclosed report, please do not hesitate to contact us.



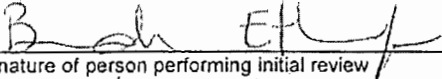
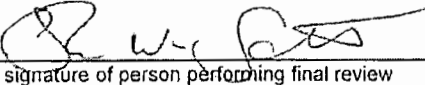
Aquatic Biology Lab
 (615) 758-5858 ext. 7549
 (615) 758-5858 ext. 7544



Acute or Chronic? Chronic
 Screen or Definitive? Screen
 Test Date: August 14-21, 2018
 Lab Identification #: L1017169-01,-02,-03

TOXICITY TEST REPORT SHEET

- 1). Facility/Discharger Poly Environmental Corp - Headland STP
- 2). Contact Person Mr. Steve Davis
 phone (facility) 334.793.4700
 email 1 sdavis@polyengineering.com
 email 2 emurphree@polyengineering.com
- 3). Permit # or Project ID AL0027014
- 4). Report Address
 PO Box 837
 Dothan, AL 36303
- 5). Receiving Stream
- 6). Laboratory Name Pace National
- 7). Laboratory Contact Shain W. Schmitt, Sr. Aquatic Biologist
 (phone) 615.773.9687
- 8). Outfall(s) Tested Outfall 0011
- 9). Test Species #1 *Ceriodaphnia dubia* #2 *Pimephales promelas*
- 10). Species Age #1 Neonates, <24-hr #2 24-36 hrs old
- 11). Test Conditions
 (Static or Static-Renewal?) #1 Static-Renewal #2 Static-Renewal
- 12). Dilution Water Type
 (synthetic, receiving stream) Moderately Hard SDW
- 13). Aeration?
 (Before/During Test) none
- 14). Dechlorination? none
- 15). Original Chlorine Level <0.2mg/L, <0.2mg/L, <0.2mg/L
- 16). Report prepared by Amy M. Eggleston, Biologist

 signature of person performing initial review	9-18-18 date
Brandon Etheridge name (typed or printed)	Sr. Biologist title
 signature of person performing final review	9-26-18 date
Shain W. Schmitt name (typed or printed)	Sr. Aquatic Biologist title

SAMPLING SUMMARY

Sample	Sample Type Grab or Composite	Volume Collected	Sample Collection		Flow Rate (at collection)	Sample Temperature (when received at lab)
			Begin (MM/DD/Time)	End (MM/DD/Time)		
1	Grab	3 Liters	8/12/2018 @ 8:00	8/13/2018 @ 8:00	0.15	1.0 deg C
2	Grab	3 Liters	8/14/2018 @ 7:00	8/15/2018 @ 7:00	0.264	1.0 deg C
3	Grab	4 Liters	8/16/2018 @ 8:30	8/17/2018 @ 8:30	0.16	1.0 deg C

Comments:

TEST PERFORMANCE

Species #1
Ceriodaphnia dubia (water flea)
8/14/2018 @ 14:48 to 8/20/2018 @ 14:21

Species Age
< 24 hrs old, within 8 hrs of the same age

Organism Source
Pace National, in-house cultures

Acclimation Procedure
cultured in Moderately Hard SDW at 25 deg C

Test Duration
3-Brood

Feeding Regime
0.15 mL YCT and 0.15 mL algal suspension, daily, upon renewal

Type of Test Chamber
polystyrene cup

Volume of Test Chamber
30 mL

Volume of Solution Used Per Test Chamber
20 mL

Number of Test Organisms Per Test Chamber
one (1)

Number of Replicates Per Treatment
ten (10)

Species #2
Pimephales promelas (fathead minnow)
8/14/2018 @ 14:44 to 8/21/2018 @ 11:48

Species Age	Hatch Date	Pace National Lot #
24-36 hrs old	8/13/2018	081318HD

Organism Source
Aquatic Bio Systems - Fort Collins, CO

Acclimation Procedure
acclimated in 20% DMW at 25 deg C for about 2 hrs

Test Duration
7-Day

Feeding Regime
0.15 mL - 0.2 mL newly hatched brine shrimp nauplii, twice daily

Type of Test Chamber
polypropylene beaker

Volume of Test Chamber
500 mL

Volume of Solution Used Per Test Chamber
250 mL

Number of Test Organisms Per Test Chamber
ten (10)

Number of Replicates Per Treatment
four (4)

ADDITIONAL TOXICITY TEST INFORMATION

Copies of all bench sheets and statistical calculations and printouts obtained during the test are attached in the Appendix.

Methods/Instrumentation used in chemical analysis:

Dissolved Oxygen: YSI 5000 DO Meter/Probe (serial #01L0435)

pH: Beckman 390pH/Temp/mV/ISE Meter

pH/RDO/Conductivity: Thermo Scientific Orion VersaStar (serial #V 02105)

Water Bath: Lindberg/Blue, Model WB1140A-1 (serial #S01M-580360-SM)

Temperature: Thermometers calibrated to NIST certified thermometer

Alkalinity: Lachat

Hardness: Lachat

Total Residual Chlorine: Hach Pocket Colorimeter, Model #46770-00 (serial #971000112186)

Environmental Chambers: 25 degrees C + 1.0 degree - Thermo-Kool

Environmental Chambers (for Colorado tests): 20 degrees C \pm 1.0 degree - Thermo Scientific Model 3759

Light Quality: Ambient Lab Illumination

Light Intensity: 50-100 ft-c - VWR Traceable Dual-Range Light Meter- Model 62344-944 (S/N 181399747)

Photoperiod: 16 hours light, 8 hours dark

Drying: Overnight at greater than 60 degrees Celsius in a Fisher Scientific Isotemp Oven, Model 655F

Mean Dry Weight: Determined using Mettler Toledo Balance, AT261 Delta Range

Reference Weights (Set #1): Class 1, TREOMNER, Inc., serial number 85035

Reference Weights (Set #2): Class 1, TREOMNER, Inc., serial number 67812

EPA Acute Manual Edition and Date: EPA-821-02-012 October 2002, Fifth Edition

EPA Chronic Manual Edition and Date: EPA-821-R-02-013 October 2002, Fourth Edition

This method is performed only by Assistant Biologists, Biologists, and Senior Biologists that have experience with aquatic toxicity testing. Laboratory Technicians, Chemists, and any other laboratory personnel that are not experienced with toxicity testing will not handle test organisms during a toxicity evaluation. Lab Techs, Chemists, and others may assist (under supervision) with the gathering of data during the evaluation (pH, DO, conductivity, alkalinity, hardness, etc.), but will not be allowed to do any work with the test organisms themselves. The following analysts have met Technical Training Qualifications and their initials (in parenthesis) can be found on the bench sheets in this report: **Brandon Etheridge (BE); Shain W. Schmitt (SWS);**

Stacy Kennedy (SK); Adam Macomber (AM); Amy Eggleston (AME);

Melissa Holwerda (MH); Cody Medley (CM); Kristen Rodgers (KR);

Clarissa Moore (CGM); Nadiar Yakob (NY); Keith Hargis (KH); Jon Berry (JB); Paige Brazzell (PB)

Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from EPA Methodology that were necessary for these tests as well as any sample manipulations which were performed, such as aeration, dechlorination with sodium thiosulfate (etc) and the justification for such manipulations or deviations. Attach additional pages as needed.

< no deviations to report >



Toxicity Test Results

Results of a Ceriodaphnia (Genus) dubia (Species) 3-Brood, Survival & Reproduction Test (Type/Duration)

Conducted 8/14/2018 to 8/20/2018 Using Effluent from Outfall:
Outfall 0011

Test Solution	Percent Surviving (time intervals used - days)								# of Young	
	0	1	2	3	4	5	6	7	Total	Mean
Control	100	100	100	100	90	90	90		237	23.7
100% Effluent	100	100	100	100	100	100	100		243	24.3

Permit Limit: (IWC) 100% NOEC Value: (AEC) 100% survival 100% reproduction

Coefficient of Variance (CV%): 33.9%

Confidence Limits
 Upper Limit: Lower Limit:

Statistical methods used to determine NOEC (if applicable):

Fisher Exact Test, Dunnett's Test, Wilcoxon Rank Sum Two-Sample Test, Variance Ratio F Test, Shapiro-Wilk W Normality Test

Percent Minimum Significant Difference: 21.5%

$$PMSD = \frac{\text{Minimum Significant Difference} \times 100}{\text{Control Mean (reproduction)}}$$

The PMSD describes the variability that occurred within the test. If the PMSD value for a given test is less than or equal to the 90th PMSD (47 for *Ceriodaphnia*), the test's variability measure is within the normal range expected for the test.

INTERPRETATION OF RESULTS

Ceriodaphnia dubia (water flea) - No toxicity was demonstrated. Using Fisher Exact Test, Dunnett's Test, Wilcoxon Rank Sum Two-Sample Test, Variance Ratio F Test, and Shapiro-Wilk W Normality Test, it was determined that the AEC (Adverse Effect Concentration) for survival and reproduction is equal to 100% effluent. There was no statistically significant difference between the effluent concentration and the Control. Permittee successfully meets permit requirements for the period (PASS test).



Toxicity Test Results

Results of a Pimephales promelas 7-day, Survival & Growth Test
 (Genus) (Species) (Type/Duration)

Conducted 8/14/2018 to 8/21/2018 Using Effluent from Outfall:
Outfall 0011

Test Solution	Percent Surviving (time intervals used - days)								Dry Weight (mg)	
	0	1	2	3	4	5	6	7	Total	Mean
Control	100	97.5	97.5	95	95	95	95	95	1.5720	0.3930
100% Effluent	100	100	100	97.5	97.5	97.5	97.5	92.5	1.3990	0.3498

Permit Limit: (IWC) 100% NOEC Value: (AEC) 100% survival 100% growth

Coefficient of Variance (CV%): 14.8%

Confidence Limits
 Upper Limit: Lower Limit:

Statistical methods used to determine NOEC (if applicable):
Equal Variance t Two-Sample Test, Shapiro-Wilk W Normality Test, Dunnett's Test, Variance Ratio F-Test

Percent Minimum Significant Difference: 18.3%

$$PMSD = \frac{\text{Minimum Significant Difference} \times 100}{\text{Control Mean (growth)}}$$

The PMSD describes the variability that occurred within the test. If the PMSD value for a given test is less than or equal to the 90th PMSD (30 for fathead minnow), the test's variability measure is within the normal range expected for the test.

INTERPRETATION OF RESULTS

Pimephales promelas (fathead minnow) - No toxicity was demonstrated. Using Equal Variance t Two-Sample Test, Shapiro-Wilk W Normality Test, Variance Ratio F-Test, and Dunnett's Test, it was determined that the AEC (Adverse Effect Concentration) for survival and growth is equal to 100% effluent. There was no statistically significant difference between the effluent concentration and the Control. Permittee successfully meets permit requirements for the period (PASS test).



Facility/Discharger: Poly Environmental Corp - Headland STP
Lab Identification #: L1017169-01,-02,-03
Test Date: August 14-21, 2018

APPENDIX

4. SAMPLE COLLECTION:

Split samples: N/A Yes _____ (explain)

Samples Collected as Specified in the NPDES Permit: Yes No (explain) _____

Receiving Water: _____ Design Flow: _____ (MGD)

Sample ID	Sample(s) Collected				Arrival Temp (°C)	Used in Test(s)	
	MM/DD/YY	HH:MM	- MM/DD/YY	HH:MM		MM/DD/YY	- MM/DD/YY
L1017169-01	8/12/2018	8:00	8/13/2018	8:00	1.0	8/14/2018	8/15/2018
L1017169-02	8/14/2018	7:00	8/15/2018	7:00	1.0	8/16/2018	8/17/2018
L1017169-03	8/16/2018	8:30	8/17/2018	8:30	1.0	8/18/2018	8/21/2018

5. CONTROL / DILUTION WATER:

Type	Prepared MM/DD/YY	Begin Use MM/DD/YY	Initial Water Chemistries				
			Hardness	Alkalinity	pH	Spec. Con.	@ °C
MHSDW	Q 8-13	8/14/2018	57	46	7.4	250	25
MHSDW	Q 8-14	8/15/2018	61	45	7.5	256	25
MHSDW	Q 8-15	8/16/2018	60	50	7.7	263	25
MHSDW	Q 8-16	8/17/2018	65	45	7.2	258	25
MHSDW	Q 8-17	8/18/2018	63	46	7.6	266	25
MHSDW	Q 8-18	8/19/2018	60	47	7.7	269	25

*Reading missed due to conductivity meter not working properly.

*Alk/Hard not submitted for analysis due to analyst error.

6. TOXICITY TEST INFORMATION:

Test Species	Organism Age	Organism Source	Test Solution Concentrations (%)			
<i>Ceriodaphnia dubia</i>	< 24 hours old	in-house cultures	Control	100		
<i>Pimephales promelas</i>	< 36 hours old	Aquatic Bio Systems, Inc.	Control	100		

Test Species	Test Vessel Type	Vessel Volume (mL)	Solution Volume (mL)	Org. / Test Vessel	Replicates per Conc.
<i>Ceriodaphnia dubia</i>	polystyrene cups	30 mL	20 mL	1	10
<i>Pimephales promelas</i>	polypropylene cups	500 mL	250 mL	10	4

Test Species	Temperature Range	D.O. Range (mg/L)	pH Range (mg/L)	Light Intensity Average (ft-c)
<i>Ceriodaphnia dubia</i>	24.3 - 26.0	8.7 - 9.2	6.6 - 7.8	73.5
<i>Pimephales promelas</i>	24.0 - 26.0	8.7 - 9.2	6.6 - 7.8	73.5

7. FEEDING:

Not Fed: _____ Fed Daily: Fed Irregular: _____ (explain in comments below)

Brine Shrimp: Fed 0.15 - 0.2 mL suspension of newly hatched larvae 2 times daily.

YCT: Fed 0.15 mL suspension containing 1720 mg/L TSS daily.

Algae: Fed 0.15 mL suspension containing 3.0 X 10⁷ algal cells/mL daily.

COMMENTS:

8. REFERENCE TOXICANT TESTS:

Toxicant: potassium chloride (KCl) Source: VWR International LLC VWR Lot#: 0258C509
 ESC Lot #: 35192

Solution concentration unit: _____ mg/L _____ X _____ g/L _____ % _____ Other (specify)

Test Organism	Test Date MM/DD - MM/DD	Control Water	Reference Test Solution Concentrations (control to highest concentration)					
			Control	0.05	0.1	0.2	0.4	0.8
<i>Ceriodaphnia dubia</i>	8/7 - 8/13	Moderately Hard SDW	Control	0.05	0.1	0.2	0.4	0.8
<i>Pimephales promelas</i>	8/7 - 8/14	Moderately Hard SDW	Control	0.1875	0.375	0.75	1.5	3.0

Test Organism	Results IC25	95% Confidence Interval	Upper and Lower CUSUM Chart Control Limit (this test)	Number (N)
<i>Ceriodaphnia dubia</i>	0.2994	0.1907 - 0.4237		
<i>Pimephales promelas</i>	0.5491	0.5112 - 0.5871		

9. TEST CONDITION VARIABILITY:

9.A. Deviations from standard test conditions:

<< no manipulations or modifications to report >>

9.B. Test solution manipulations or test modifications:

<< no manipulations or modifications to report >>

10. REQUIRED REPORT ATTACHMENTS:

Attach copies of Chain-of-Custody Forms, Reference Toxicant Tests, and Raw Data (bench sheets) pertaining to physical, chemical, and biological measurements for all tests. Include suspended, interrupted, or discontinued toxicity test data.

COMMENTS:

11.A. ACUTE SCREENING TOXICITY TEST RESULTS (freshwater):

TEST ORGANISM: _____

ACUTE TOXICITY INDICATED: _____ YES _____ NO

NO ACUTE STATISTICAL ANALYSIS NECESSARY: _____

SOLUTION CONC (%)	CONTROL				
MORTALITY (%)					

not

PERMITTED MORTALITY RATE (%): _____

Normally Distributed: YES _____ NO

Test Statistic: _____ Critical Value: _____ (Parametric)

Equal Variance: _____ Unequal Variance: _____

F Statistic: _____ Critical F: _____

t-Test Statistic: _____ t-Test Critical Value: _____

Sample Rank Sum: _____ # Reps: _____ Critical Rank Sum: _____ (Non-Parametric)

COMMENTS:

applicable

TEST ORGANISM: _____

ACUTE TOXICITY INDICATED: _____ YES _____ NO

NO ACUTE STATISTICAL ANALYSIS NECESSARY: _____

SOLUTION CONC (%)	CONTROL				
MORTALITY (%)					

not

PERMITTED MORTALITY RATE (%): _____

Normally Distributed: YES _____ NO

Test Statistic: _____ Critical Value: _____ (Parametric)

Equal Variance: _____ Unequal Variance: _____

F Statistic: _____ Critical F: _____

t-Test Statistic: _____ t-Test Critical Value: _____

Sample Rank Sum: _____ # Reps: _____ Critical Rank Sum: _____ (Non-Parametric)

COMMENTS:

applicable

11.C. CHRONIC SCREENING TOXICITY TEST RESULTS (freshwater):

TEST ORGANISM: Ceriodaphnia dubia

Were neonates used to begin the test within 8 hours of the same age? yes

Did 60% of the CONTROL females produce their third brood? yes

SURVIVAL

CHRONIC TOXICITY INDICATED: YES _____ NO X

NO SURVIVAL STATISTICAL ANALYSIS NECESSARY: _____

CONTROL (%)	24 h <u>100%</u>	48 h <u>100%</u>	END <u>90.0%</u>	EFFLUENT (%)	24 h <u>100%</u>	48 h <u>100%</u>	END <u>100%</u>
Fisher's Exact Test:	A = _____	B = _____		a = _____	b = _____		

REPRODUCTION (Average Neonates/Female)

CHRONIC TOXICITY INDICATED: YES _____ NO X

CONTROL: 23.7 EFFLUENT: 24.3

NO REPRODUCTION STATISTICAL ANALYSIS NECESSARY: _____

Normally Distributed:	YES _____	NO <u>X</u>		
Test Statistic:	<u>0.7578</u>	Critical Value:	<u>0.866</u>	(Parametric)
Equal Variance:	<u>X</u>	Unequal Variance:	_____	
F Statistic:	<u>2.999</u>	Critical F:	<u>6.541</u>	
t-Test Statistic:	_____	t-Test Critical Value:	_____	
Sample Rank Sum:	<u>98</u>	# Reps:	<u>10</u>	Critical Rank Sum: <u>N/A</u> (Non-Parametric)

COMMENTS: **PASS test (AEC = 100%)**

TEST ORGANISM: Pimephales promelas

SURVIVAL

CHRONIC TOXICITY INDICATED: YES _____ NO X

NO SURVIVAL STATISTICAL ANALYSIS NECESSARY: _____

CONTROL (%)	24 h <u>97.5%</u>	48 h <u>97.5%</u>	END <u>95.0%</u>	EFFLUENT (%)	24 h <u>100%</u>	48 h <u>100%</u>	END <u>92.5%</u>
Normally Distributed:	YES <u>X</u>	NO _____					
Test Statistic:	<u>0.8766</u>	Critical Value:	<u>0.6451</u>	(Parametric)			
Equal Variance:	<u>X</u>	Unequal Variance:	_____				
F Statistic:	<u>2.439</u>	Critical F:	<u>47.47</u>				
t-Test Statistic:	<u>0.4066</u>	t-Test Critical Value:	<u>1.943</u>				
Sample Rank Sum:	_____	# Reps:	<u>4</u>	Critical Rank Sum: _____ (Non-Parametric)			

GROWTH (Mean Dry Weight - mg)

CHRONIC TOXICITY INDICATED: YES _____ NO X

CONTROL: 0.393 EFFLUENT: 0.3498

NO GROWTH STATISTICAL ANALYSIS NECESSARY: _____

Normally Distributed:	YES <u>X</u>	NO _____		
Test Statistic:	<u>0.8967</u>	Critical Value:	<u>0.6451</u>	(Parametric)
Equal Variance:	<u>X</u>	Unequal Variance:	_____	
F Statistic:	<u>1.627</u>	Critical F:	<u>47.47</u>	
t-Test Statistic:	<u>1.172</u>	t-Test Critical Value:	<u>1.943</u>	
Sample Rank Sum:	_____	# Reps:	<u>4</u>	Critical Rank Sum: _____ (Non-Parametric)

COMMENTS: **PASS test (AEC = 100%)**

Poly Env. - Headland STP

NPDES #: AL0027014

Test Date: August 14-21, 2018

Login #: L1017169 -01,-02,-03

Tue 8/14/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.6	252.5	8.8	14:52:35	KR
Dup. Control	7.6	252.2	8.8	14:52:57	KR
100	6.9	115.7	8.9	14:53:38	KR
Dup. 100	6.9	115.5	9.1	14:53:56	KR

Comments:

Control #12 All data is entered in real time, data sheets are electronically tracked, and password protected.

Wed 8/15/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.7	256.6	8.3	10:10:15	KR
100	6.8	115.8	9	10:11:03	KR

<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>				
Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	7.6	8.4	10:12:44	KR	7.5	8.1	9:27:56	PB
Dup. Control	7.6	8.1	10:13:34	KR	7.5	8.1	9:28:13	PB
100	7.3	8.1	10:14:27	KR	7.1	8.1	9:28:54	PB
Dup. 100	7.3	8	10:15:05	KR	7.1	8	9:29:11	PB

Thu 8/16/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.4	266.7	8.9	15:10:09	KH
100	7	128.2	8.7	15:10:53	KH

<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>				
Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	7.7	8.8	16:10:58	KH	7.4	7.8	9:00:45	JB
100	7.5	8.7	16:11:57	KH	7	7.7	9:01:59	JB

Fri 8/17/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.3	250.8	8.9	14:26:48	PB
100	6.7	132	9.2	14:27:30	PB

<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>				
Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	7.6	8.8	15:30:52	PB	7.3	8	9:25:57	PB
100	7.4	8.7	15:31:18	PB	7	8.1	9:26:32	PB

Sat 8/18/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.5	267.3	9.1	13:45:12	MH
100	6.6	106.5	9.1	13:46:16	MH

<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>				
Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	7.4	8.6	13:26:03	MH	7.1	7.5	8:20:03	PB
100	7.1	8.4	13:26:26	MH	6.8	7.6	8:20:39	PB

Sun 8/19/18

Initials	pH	Con.	DO	Time	Analyst
Control	*	*	*	*	
100	*	*	*	*	

<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>				
Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	8	9.1	16:22:40	NY	7.2	9.3	9:16:27	JB
100	7.6	8.8	16:23:32	NY	7	8	9:16:57	JB

*Readings missed. Analyst error- CGM 8-23-18

Mon 8/20/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.8	276.4	9.6	16:11:21	JB
100	7.3	122.1	8.7	16:12:10	JB

<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>				
Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	7.6	8.3	15:43:00	JB	7.2	7.8	9:12:40	JB
100	7.4	8.3	15:43:32	JB	6.7	7.7	9:11:23	JB

Tue 8/21/18

Initials	pH	Con.	DO	Time	Analyst
Control	/	/	/	/	
100	/	/	/	/	

<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>				
Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	/	/	/	/	7.4	7.5	8:04:14	PB
100	/	/	/	/	7	7.4	8:05:01	PB

Initials	pH		Con		DO	
	range	mean	range	mean	range	mean
Control	7.3-7.8	7.6	250.8-278.4	261	8.3-9.1	8.8
100	6.6-7.3	6.9	106.5-132	119	8.7-9.2	9.0

Initials	<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>			
	pH		DO		pH		DO	
	range	mean	range	mean	range	mean	range	mean
Control	7.4-8	7.6	8.1-9.1	8.6	7.1-7.5	7.3	7.5-8.1	7.9
100	7.1-7.6	7.4	8-8.8	8.4	6.7-7.1	7.0	7.4-8.1	7.8

Poly Env. - Headland STP

NPDES #: AL0027014

Test Date: August 14-21, 2018

ESC Lab #: L1017169 -01,-02,-03

Thermometer Serial #: 18050064

Record of Daily Temperatures (°C)

***Pimephales promelas* (fathead minnow)** - measurement taken in test chambers

	Tue 8/14/18	Wed 8/15/18	Thu 8/16/18	Fri 8/17/18	Sat 8/18/18	Sun 8/19/18	Mon 8/20/18	Tue 8/21/18
Analyst: (initial)	PB	KH	NY	PB	KR	NY	NY	
Temp of Sample Container	25.3°C	26.0°C	25.2°C	24.1°C	26.0°C	25.2°C	24.6°C	
Control (initial)	24.7°C	24.7°C	25.4°C	24.7°C	24.5°C	25.4°C	24.8°C	
100	25.1°C	25.6°C	25.4°C	24.7°C	26.0°C	25.5°C	24.4°C	
	(final)	(final)	(final)	(final)	(final)	(final)	(final)	(final)
Analyst:	NY	NY	KH	*	NY	NY	NY	
Control	24.3°C	24.6°C	24.5°C	*	25.0°C	25.0°C	25.3°C	
100	24.4°C	24.5°C	25.2°C	*	25.1°C	25.0°C	25.1°C	

*Temperatures missed due to analyst error.

***Ceriodaphnia dubia* (water flea)** - measurement taken in surragote cup located on each tray

	Tue 8/14/18	Wed 8/15/18	Thu 8/16/18	Fri 8/17/18	Sat 8/18/18	Sun 8/19/18	Mon 8/20/18	Tue 8/21/18
Analyst: (initial)	PB	KH	NY	PB	KR	NY		
Temp of Sample Container	25.3°C	26.0°C	25.2°C	24.1°C	26.0°C	25.5°C		
Control (initial)	24.8°C	24.3°C	25.3°C	24.3°C	24.5°C	25.5°C		
100	25.0°C	26.0°C	25.3°C	24.0°C	25.8°C	25.6°C		
	(final)	(final)	(final)	(final)	(final)	(final)	(final)	(final)
Analyst:	NY	NY	KH	KR	NY	NY		
Control	24.5°C	24.6°C	25.1°C	25.1°C	25.3°C	25.1°C		
100	24.8°C	24.3°C	25.1°C	25.1°C	25.3°C	25.0°C		

Poly Env. - Headland STP

Poly Env. - Headland STP

NPDES # AL0027014

Test Dates: August 14-21, 2018

L#: L1017169-01,-02,-03

Control #12

L# of Control		Alkalinity (mg/L)	Hardness (mg/L)	
L1017440-04	Tue 8/14/18	46	57	Q 8-13
L1018377-03	Thu 8/16/18	50	60	Q 8-15
L1019147-02	Sat 8/18/18	46	63	Q 8-17

Alkalinity (mg/L)	
range: 46-50	mean: 47.3
Hardness (mg/L)	
range: 57-63	mean: 60.0

100% Effluent		Alkalinity (mg/L)	Hardness (mg/L)
	Tue 8/14/18	BDL	33
	Thu 8/16/18	26	35
	Sat 8/18/18	21	31

Alkalinity (mg/L)	
range: 21-26	mean: 23.5
Hardness (mg/L)	
range: 31-35	mean: 33.0

	Total Res. Cl ₂ (mg/L)	Analyst
Tue 8/14/18	<0.2	NY
Thu 8/16/18	<0.2	KH
Sat 8/18/18	<0.2	PB

Record of Daily *Pimephales promelas* (fathead minnow) Feedings

Minnows in chronic WET tests are fed 0.15 - 0.2 mL (per test vessel) newly hatched brine shrimp nauplii, twice daily (morning & afternoon). At test initiation, minnows are fed only once (in the afternoon). On the final day of the test, minnows are not fed.

Morning Feedings

	Tue 8/14/18	Wed 8/15/18	Thu 8/16/18	Fri 8/17/18	Sat 8/18/18	Sun 8/19/18	Mon 8/20/18	Tue 8/21/18
Time:	test initiation	7:50	7:55	7:45	7:42	7:40	8:00	test ends
Analyst:	not applicable	KR	KR	KR	KR	NY	NY	not fed

Afternoon Feedings

	Tue 8/14/18	Wed 8/15/18	Thu 8/16/18	Fri 8/17/18	Sat 8/18/18	Sun 8/19/18	Mon 8/20/18	Tue 8/21/18
Time:	17:00	17:00	16:04	16:40	13:45	16:00	17:00	test ends
Analyst:	AM	JB	KR	KR	MH	NY	NY	not fed

Light Intensity (ft-c) of Test Incubator

	Tue 8/14/18	Wed 8/15/18	Thu 8/16/18	Fri 8/17/18	Sat 8/18/18	Sun 8/19/18	Mon 8/20/18	Tue 8/21/18
Top	77.1	75.1	72.1	69.5	80.1	77.4	78	80.5
Middle	76.4	73.8	70	63.2	76.2	77.1	77.3	80
Bottom	74.3	69.9	66.8	55	69.9	73.6	74.8	76.4
Average	75.9333333	72.93333	69.63333	62.56667	75.4	76.03333	76.7	78.966667

Light Intensity (ft-c) - average of all days in test period

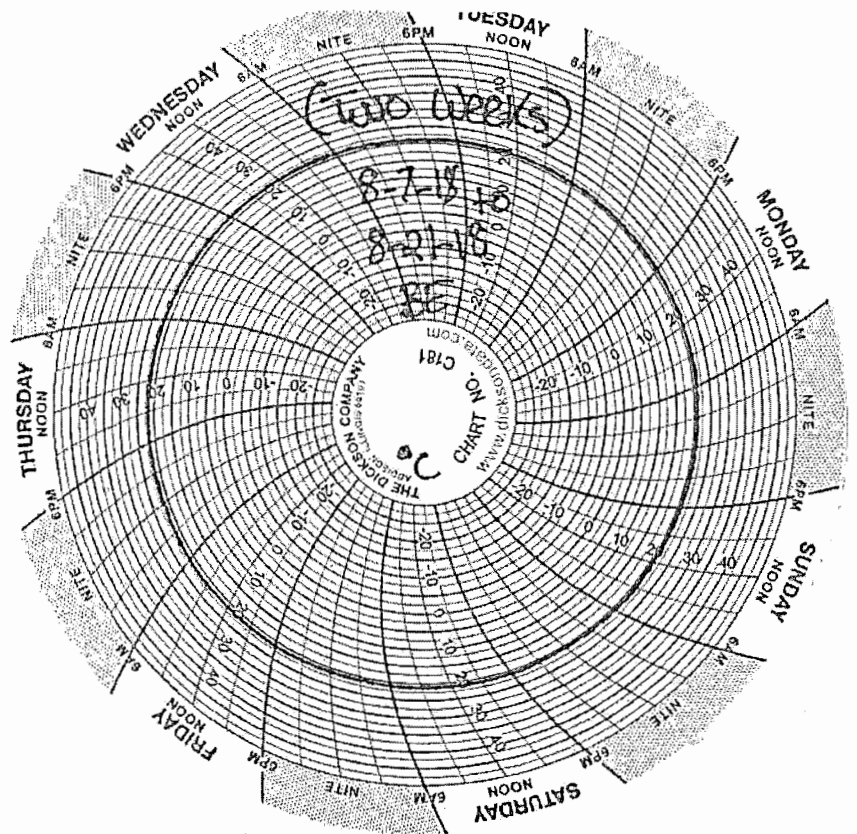
73.52083333

Poly Env. - Headland STP

Chart Devices Used in Thermo-Kool Walk-in Incubator:

Dickson (small chart)

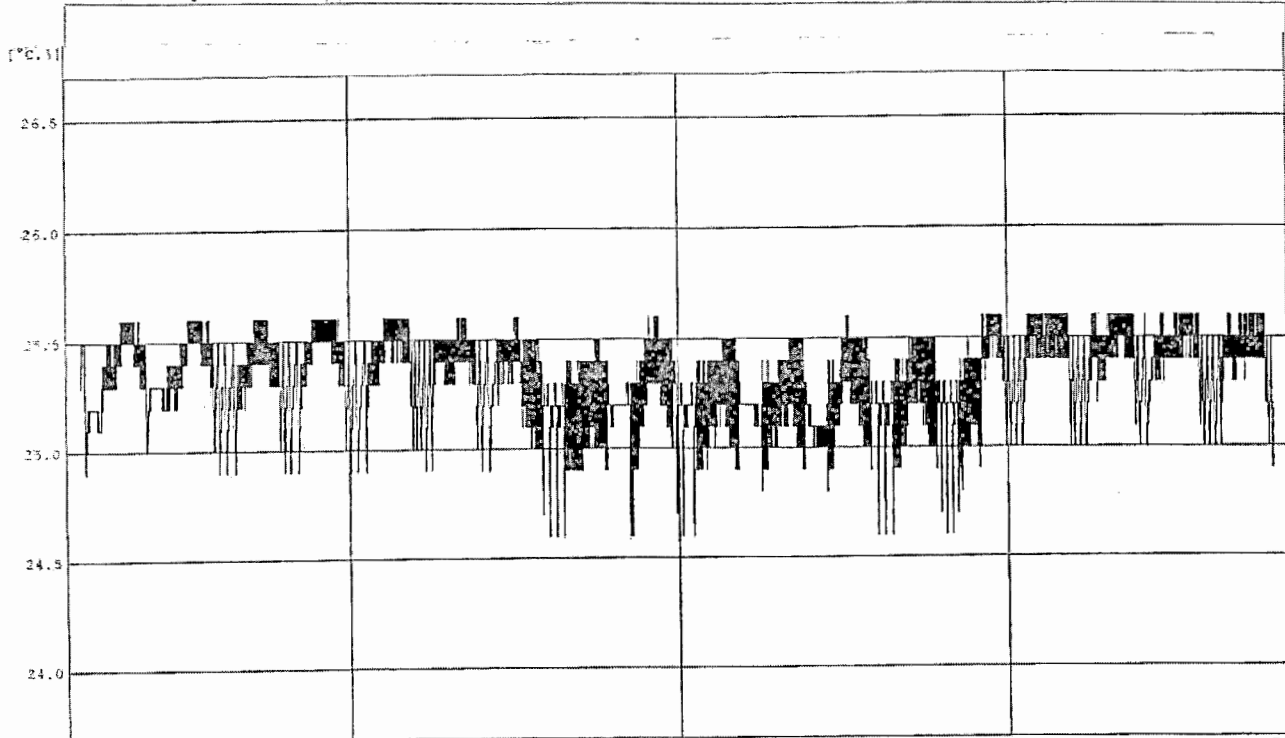
~~Massport (large chart)~~



Week of 8-7-18 to 8-21-18 (Two Weeks) BE

Thermo Graph for Windows

08/21/2018 16:59:59



A		B	
08/07/18 0:00'00	08/12/18 0:00'00	08/17/18 0:00'00	

ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.6	25.3	°C
2	Ch2	2min.	8000	-----	-----	-----	25.6	24.6	25.3	°C
3	Ch1	2min.	8000	25.0	-----	-----	25.6	24.6	25.3	°C
4	Ch2	2min.	8000	25.0	-----	-----	25.6	24.6	25.3	°C

Cur.A Date : 08/07/2018 0:15'00
 Cur.B Date : 08/21/2018 1:19'40
 diff. A-B : 14 01:04'40.000

Data Range 08/02/2018 17:19'53-08/21/2018 6:25'08
 Calc.Range 08/02/2018 22:32'50-08/21/2018 1:12'11

NOTATIONS USED BY ANALYSTS DURING TOXICITY EVALUATIONS

Ceriodaphnia dubia (water flea)

- # numbers on the Reproduction bench sheets (chronic) indicate the number of live young produced
- @ if number is circled, this indicates movement of daphnid has become impaired either by actual algal growth on the organisms, or has become entrapped in substances found in the effluent sample, or has been covered in stalked cilia
- ME (molted embryo) often a stressed or poor condition female will abort all or some of a brood in response to a toxin, insufficient nutrition, or just an inability to sustain a certain level of reproduction
- P (pale) this is a noticeable reduction in coloration compared to that which is normal for the individual's age
- SS (small size) this observation is made in comparison to other individuals of the same brood or age group and generally represents a difference of at least 2X size difference
- ES (erratic swimming) this represents a locomotor behavior typified by unsustained swimming with the daphnid periodically "resting" on the bottom of the test vessel; this condition is often observed prior to a daphnid becoming totally immotile
- I (immotility) this denotes a total lack of motility; daphnid is on the bottom of the test vessel and is confirmed as living; daphnids are frequently dead within a short time
- LIT (lost in transfer) organism was lost during transfer process; stats are adjusted to represent this dilution as having one less organism
- NL (not loaded) organism was not loaded at test initiation; stats are adjusted to represent this dilution having one less organism
- NT (not transferred) organism was not present at the time of the next transfer; stats are adjusted to represent this dilution having one less organism loaded at the initiation of testing
- X (dead) dead daphnid is on bottom of test vessel and is confirmed dead by observation of no appendage movement and no visible heartbeat

Pimephales promelas (fathead minnow)

- # numbers indicate the number of live organisms remaining
- BS (bent spine) fish appear to have a curved spine
- LR (loss of reflex) fish are alive, but slow to react to gentle prodding
- NL (not loaded) organism was not loaded at test initiation; stats are adjusted to represent this dilution having one less organism
- TS (top swimmers) fish appear to congregate only at the surface of the test solution (sometimes attributed to low dissolved oxygen levels)
- SS (small size) this observation is made in comparison to other individuals of the same age group and generally represents a difference of at least 2X size difference

Date(s) and Time(s) of Neonate Harvest:

From 17:13 on 8/13/2018 to 23:18 on 8/13/2018

Neonates were Harvested from the Following Tray(s):

080618XA1 080618XA1 080618XA1 080618XA1 080618XA1 080718AD1 080718AD1 080718AD1 080718AD1 080718AD2

Template Name:

Neonates were Harvested from the Following Cups:

E3 E5 G2 G4 H1 D4 D6 E4 I6 F2

ZETA

Control Water Carboy Used

Description of Sample Being Analyzed Below:				CONTROL 12 Poly Env. - Headland STP											AL0027014		
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time	Analyst		A: 1	B: 4	C: 2	D: 6	E: 1	F: 5	G: 3	H: 6	I: 4	J: 7				
Q 8-13	Tue 8/14/18	14:48	CGM	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Q 8-14	Wed 8/15/18	10:00	KH	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Q 8-15	Thu 8/16/18	13:37	KH	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10	
Q 8-16	Fri 8/17/18	14:40	KR	72 hrs	0	0	0	4	6	0	2	0	5	0	17	10	
Q 8-17	Sat 8/18/18	12:50	KR	96 hrs	2	3	4	0	0	6	0 X	5	0	4	24	9	
Q 8-18	Sun 8/19/18	15:42	CM	120 hrs	6	8	7	8	11	11	-	9	9	12	81	9	
	Mon 8/20/18	14:21	CM	144 hrs	13	13	17	13	13	12	-	12	12	10	115	9	
	Tue 8/21/18			168 hrs							-				0		
	Wed 8/22/18			192 hrs							-				0		
Total # of Young Produced:					21	24	28	25	30	29	2	26	26	26	Total Offspring at Renewal	Total Young Produced	
															237	237	

Test Acceptability Criteria:	Survival ≥ 80%?	≥ 15 neonates/female?	≥ 60% 3rd brood?	Control Valid?
	YES NO	YES NO	YES NO	YES NO
	X	X	X	X

Description of Sample Being Analyzed Below:				100 Poly Env. - Headland STP											AL0027014	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 3	B: 6	C: 1	D: 4	E: 2	F: 6	G: 4	H: 7	I: 5	J: 1			
	Tue 8/14/18	14:48	CGM	initiation	0	0	0	0	0	0	0	0	0	0	0	10
	Wed 8/15/18	10:04	KH	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Thu 8/16/18	13:42	KH	48 hrs	0	0	0	0	0	0	0	0	0	0	10	
	Fri 8/17/18	14:42	KR	72 hrs	0	0	0	5	0	0	0	4	0	9	10	
	Sat 8/18/18	12:52	KR	96 hrs	3	5	4	0	4	5	3	4	0	3	31	10
	Sun 8/19/18	15:46	CM	120 hrs	7	9	10	7	7	8	8	8	7	8	79	10
	Mon 8/20/18	14:25	CM	144 hrs	4	17	12	16	9	11	14	15	13	13	124	10
	Tue 8/21/18			168 hrs											0	
	Wed 8/22/18			192 hrs											0	
Total # of Young Produced:					14	31	26	28	20	24	25	27	24	24	Total Offspring at Renewal	Total Young Produced
															243	243

Comments:

CETIS Summary Report

Report Date: 23 Aug-18 10:05 (p 1 of 1)
 Test Code/ID: L1017169(CD) / 16-0024-4548

Ceriodaphnia 7-d Survival and Reproduction Test ESC Lab Sciences

Batch ID: 21-0911-8620	Test Type: Reproduction-Survival (7d)	Analyst: Clarissa Moore
Start Date: 14 Aug-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 20 Aug-18	Species: Ceriodaphnia dubia	Brine:
Test Length: 6d 0h	Taxon: Branchiopoda	Source: In-House Culture Age: <24

Sample ID: 17-2051-0657	Code: 668CE8C1	Project:
Sample Date: 13 Aug-18 08:00	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)
Receipt Date: 14 Aug-18 08:45	CAS (PC):	Station:
Sample Age: 16h	Client: Poly Env.- Headland STP	

Comments:
 Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03

Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
05-0059-0493	7d Survival Rate	Fisher Exact Test	1.0000	100% passed 7d survival rate	1
01-2961-2382	Reproduction	Dunnett Multiple Comparison Test	0.5798	100% passed reproduction	1
05-5600-1133	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.3070	100% passed reproduction	1

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
05-0059-0493	7d Survival Rate	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
01-2961-2382	Reproduction	Control Resp	23.7	15	>>	Yes	Passes Criteria
05-5600-1133	Reproduction	Control Resp	23.7	15	>>	Yes	Passes Criteria

7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	23.7	17.95	29.45	2	30	2.543	8.042	33.93%	0.00%
100		10	24.3	20.98	27.62	14	31	1.469	4.644	19.11%	-2.53%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	21	24	28	25	30	29	2	26	26	26
100		14	31	26	28	20	24	25	27	24	24

CETIS Analytical Report

Report Date: 23 Aug-18 10:05 (p 1 of 1)
 Test Code/ID: L1017169(CD) / 16-0024-4548

Ceriodaphnia 7-d Survival and Reproduction Test						ESC Lab Sciences					
Analysis ID: 05-0059-0493	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.4		Status Level: 1							
Analyzed: 23 Aug-18 10:04	Analysis: Single 2x2 Contingency Table										
Batch ID: 21-0911-8620	Test Type: Reproduction-Survival (7d)	Analyst: Clarissa Moore		Diluent: Mod-Hard Synthetic Water							
Start Date: 14 Aug-18	Protocol: EPA/821/R-02-013 (2002)	Brine:		Source: In-House Culture		Age: <24					
Ending Date: 20 Aug-18	Species: Ceriodaphnia dubia										
Test Length: 6d 0h	Taxon: Branchiopoda										
Sample ID: 17-2051-0657	Code: 668CE8C1	Project:									
Sample Date: 13 Aug-18 08:00	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)									
Receipt Date: 14 Aug-18 08:45	CAS (PC):	Station:									
Sample Age: 16h	Client: Poly Env.- Headland STP										
Comments:											
Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03											
Data Transform		Alt Hyp		Comparison Result							
Untransformed		C > T		100% passed 7d survival rate							
Fisher Exact Test											
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)					
Dilution Water		100	1.0000	Exact	1.0000	Non-Significant Effect					
Test Acceptability Criteria											
		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	0.9	0.8	>>	Yes	Passes Criteria						
Data Summary											
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect				
0	D	9	1	10	0.9	0.1	0.0%				
100		10	0	10	1	0	-11.11%				
7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Analytical Report

Report Date: 23 Aug-18 10:05 (p 2 of 2)
 Test Code/ID: L1017169(CD) / 16-0024-4548

Ceriodaphnia 7-d Survival and Reproduction Test										ESC Lab Sciences	
Analysis ID: 01-2961-2382		Endpoint: Reproduction		CETIS Version: CETISv1.9.4							
Analyzed: 23 Aug-18 10:05		Analysis: Parametric-Control vs Treatments		Status Level: 1							
Batch ID: 21-0911-8620		Test Type: Reproduction-Survival (7d)		Analyst: Clarissa Moore							
Start Date: 14 Aug-18		Protocol: EPA/821/R-02-013 (2002)		Diluent: Mod-Hard Synthetic Water							
Ending Date: 20 Aug-18		Species: Ceriodaphnia dubia		Brine:							
Test Length: 6d 0h		Taxon: Branchiopoda		Source: In-House Culture		Age: <24					
Sample ID: 17-2051-0657		Code: 668CE8C1		Project:							
Sample Date: 13 Aug-18 08:00		Material: POTW Effluent		Source: NPDES Permit # (XX99999999)							
Receipt Date: 14 Aug-18 08:45		CAS (PC):		Station:							
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments: Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03											
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C > T		100% passed reproduction				21.49%			
Dunnett Multiple Comparison Test											
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	-0.2043	1.734	5.093	18	CDF	0.5798	Non-Significant Effect		
Test Acceptability Criteria											
		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	23.7	15	>>	Yes	Passes Criteria						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.8	1.8	1	0.04174	0.8404	Non-Significant Effect					
Error	776.2	43.1222	18								
Total	778			19							
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.999	6.541	0.1174	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.7578	0.866	2.2E-04	Non-Normal Distribution						
Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	23.7	17.95	29.45	26	2	30	2.543	33.93%	0.00%
100		10	24.3	20.98	27.62	24.5	14	31	1.469	19.11%	-2.53%
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	21	24	28	25	30	29	2	26	26	26
100		14	31	26	28	20	24	25	27	24	24

CETIS Analytical Report

Report Date: 23 Aug-18 10:05 (p 1 of 2)
 Test Code/ID: L1017169(CD) / 16-0024-4548

Ceriodaphnia 7-d Survival and Reproduction Test										ESC Lab Sciences	
Analysis ID: 05-5600-1133		Endpoint: Reproduction		CETIS Version: CETISv1.9.4							
Analyzed: 23 Aug-18 10:04		Analysis: Nonparametric-Two Sample		Status Level: 1							
Batch ID: 21-0911-8620		Test Type: Reproduction-Survival (7d)		Analyst: Clarissa Moore							
Start Date: 14 Aug-18		Protocol: EPA/821/R-02-013 (2002)		Diluent: Mod-Hard Synthetic Water							
Ending Date: 20 Aug-18		Species: Ceriodaphnia dubia		Brine:							
Test Length: 6d 0h		Taxon: Branchiopoda		Source: In-House Culture		Age: <24					
Sample ID: 17-2051-0657		Code: 668CE8C1		Project:							
Sample Date: 13 Aug-18 08:00		Material: POTW Effluent		Source: NPDES Permit # (XX99999999)							
Receipt Date: 14 Aug-18 08:45		CAS (PC):		Station:							
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments: Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03											
Data Transform	Alt Hyp	Comparison Result							PMSD		
Untransformed	C > T	100% passed reproduction							21.49%		
Wilcoxon Rank Sum Two-Sample Test											
Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	98	n/a	4	18	Exact	0.3070	Non-Significant Effect		
Test Acceptability Criteria											
Attribute		Test Stat	TAC Limits		Overlap	Decision					
Control Resp		23.7	Lower: 15	Upper: >>	Yes	Passes Criteria					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.8	1.8	1	0.04174	0.8404	Non-Significant Effect					
Error	776.2	43.1222	18								
Total	778		19								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.999	6.541	0.1174	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.7578	0.866	2.2E-04	Non-Normal Distribution						
Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	23.7	17.95	29.45	26	2	30	2.543	33.93%	0.00%
100		10	24.3	20.98	27.62	24.5	14	31	1.469	19.11%	-2.53%
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	21	24	28	25	30	29	2	26	26	26
100		14	31	26	28	20	24	25	27	24	24

TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow) 7-Day Survival & Weight Data

Poly Env. - Headland STP

Test Date: August 14-21, 2018

NPDES #: AL0027014

NUMBER OF SURVIVORS									
Sample Distribution		Sample #1 Tues/Wed		Sample #2 Thurs/Fri		Sample #3 Sat/Sun/Mon			
Day of the Week and Date		Tue 8/14/18	Wed 8/15/18	Thu 8/16/18	Fri 8/17/18	Sat 8/18/18	Sun 8/19/18	Mon 8/20/18	Tue 8/21/18
Effluent Conc. In%	ID of Rep.	0 hours	24 hours	48 hours	72 hours	96 hours	120 hours	144 hours	168 hours
Control #12	A: 1	10	9	9	9	9	9	9	9
	B: 4	10	10	10	9	9	9	9	9
	C: 3	10	10	10	10	10	10	10	10
	D: 5	10	10	10	10	10	10	10	10
100	A: 2	10	10	10	9	9	9	9	9
	B: 6	10	10	10	10	10	10	10	10
	C: 2	10	10	10	10	10	10	10	10
	D: 1	10	10	10	10	10	10	10	8
Initials of Analyst Checking Survival		PB	KH	NY	PB	KR	NY	NY	PB
Time that Minnows were Examined:		14:44	9:58	13:32	14:12	12:45	11:10	11:31	11:48
Carboy used to dilute sample:		Q 8-13	Q 8-14	Q 8-15	Q 8-16	Q 8-17	Q 8-18	Q 8-19	

WEIGHT DATA for SURVIVING MINNOWS							
	Weight Empty Boat (mg)	Boat w/ Fish (mg)	Weight of Larvae (mg)	Mean Weight of Larvae (mg)	Total of Mean	Mean per Concentration	
Control	A	1298.72	1303.22	4.5	0.45	1.5720	0.3930
	B	1296.9	1300.2	3.3	0.33		
	C	1297.15	1300.73	3.58	0.358		
	D	1307.24	1311.58	4.34	0.434		
100	A	1297.52	1301.15	3.63	0.363	1.3990	0.3498
	B	1296.58	1300.09	3.51	0.351		
	C	1303.18	1307.15	3.97	0.397		
	D	1298.01	1300.89	2.88	0.288		
Analyst:		PB	PB				

COMMENTS: Minnows used in this test are from ESC Lot#

081318HD Minnows were hatched on

8/13/2018

Survival \geq 80%?
YES NO

X	
---	--

\geq 0.25mg Average Weight in Surviving Controls?
YES NO

X	
---	--

Control Valid?

X	
---	--

Date & Time Put in Oven	Date & Time Removed
08-21-18 @ 11:48	08-22-18 @ 12:17

Oven Temp: 71°C	Oven Temp: 72°C
-----------------	-----------------

Analyst: PB	Analyst: PB
-------------	-------------

Login #: L1017169 -01,-02,-03

CETIS Summary Report

Report Date: 23 Aug-18 12:00 (p 1 of 1)
 Test Code/ID: L1017169(PP) / 19-6222-0163

Fathead Minnow 7-d Larval Survival and Growth Test ESC Lab Sciences

Batch ID: 10-4042-8418	Test Type: Growth-Survival (7d)	Analyst: Clarissa Moore
Start Date: 14 Aug-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 21 Aug-18	Species: Pimephales promelas	Brine:
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <36

Sample ID: 07-8801-9648	Code: 2EF839C0	Project:
Sample Date: 13 Aug-18 08:00	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)
Receipt Date: 14 Aug-18 08:45	CAS (PC):	Station:
Sample Age: 16h	Client: Poly Env.- Headland STP	

Comments:
 Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
07-4953-9990	7d Survival Rate	Equal Variance t Two-Sample Test	0.3492	100% passed 7d survival rate	1
10-0002-2860	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	0.1429	100% passed mean dry biomass-mg	1
05-5129-8061	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1429	100% passed mean dry biomass-mg	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
07-4953-9990	7d Survival Rate	Control Resp	0.95	0.8	>>	Yes	Passes Criteria
05-5129-8061	Mean Dry Biomass-mg	Control Resp	0.393	0.25	>>	Yes	Passes Criteria
10-0002-2860	Mean Dry Biomass-mg	Control Resp	0.393	0.25	>>	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.9500	0.8581	1.0000	0.9000	1.0000	0.0289	0.0577	6.08%	0.00%
100		4	0.9250	0.7727	1.0000	0.8000	1.0000	0.0479	0.0957	10.35%	2.63%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.393	0.3006	0.4854	0.33	0.45	0.02905	0.05809	14.78%	0.00%
100		4	0.3497	0.2773	0.4222	0.288	0.397	0.02277	0.04554	13.02%	11.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.9000	0.9000	1.0000	1.0000
100		0.9000	1.0000	1.0000	0.8000

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.45	0.33	0.358	0.434
100		0.363	0.351	0.397	0.288

CETIS Analytical Report

Report Date: 23 Aug-18 12:00 (p 1 of 3)
 Test Code/ID: L1017169(PP) / 19-6222-0163

Fathead Minnow 7-d Larval Survival and Growth Test										ESC Lab Sciences	
Analysis ID: 07-4953-9990		Endpoint: 7d Survival Rate			CETIS Version: CETISv1.9.4						
Analyzed: 23 Aug-18 12:00		Analysis: Parametric-Two Sample			Status Level: 1						
Batch ID: 10-4042-8418		Test Type: Growth-Survival (7d)			Analyst: Clarissa Moore						
Start Date: 14 Aug-18		Protocol: EPA/821/R-02-013 (2002)			Diluent: Mod-Hard Synthetic Water						
Ending Date: 21 Aug-18		Species: Pimephales promelas			Brine:						
Test Length: 7d 0h		Taxon: Actinopterygii			Source: Aquatic Biosystems, CO		Age: <36				
Sample ID: 07-8801-9648		Code: 2EF839C0			Project:						
Sample Date: 13 Aug-18 08:00		Material: POTW Effluent			Source: NPDES Permit # (XX99999999)						
Receipt Date: 14 Aug-18 08:45		CAS (PC):			Station:						
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments:											
Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03											
Data Transform				Alt Hyp		Comparison Result				PMSD	
Angular (Corrected)				C > T		100% passed 7d survival rate				11.45%	
Equal Variance t Two-Sample Test											
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	0.4066	1.943	0.17	6	CDF	0.3492	Non-Significant Effect		
Test Acceptability Criteria											
		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	0.95	0.8	>>	Yes	Passes Criteria						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0025169	0.0025169	1	0.1653	0.6984	Non-Significant Effect					
Error	0.0913448	0.0152241	6								
Total	0.0938616		7								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.439	47.47	0.4832	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.8766	0.6451	0.1747	Normal Distribution						
7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	0.00%
100		4	0.9250	0.7727	1.0000	0.9500	0.8000	1.0000	0.0479	10.35%	2.63%
Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	0.00%
100		4	1.295	1.061	1.529	1.331	1.107	1.412	0.07348	11.35%	2.67%
7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	0.9000	0.9000	1.0000	1.0000						
100		0.9000	1.0000	1.0000	0.8000						
Angular (Corrected) Transformed Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	1.249	1.249	1.412	1.412						
100		1.249	1.412	1.412	1.107						

CETIS Analytical Report

Report Date: 23 Aug-18 12:00 (p.3 of 3)
 Test Code/ID: L1017169(PP) / 19-6222-0163

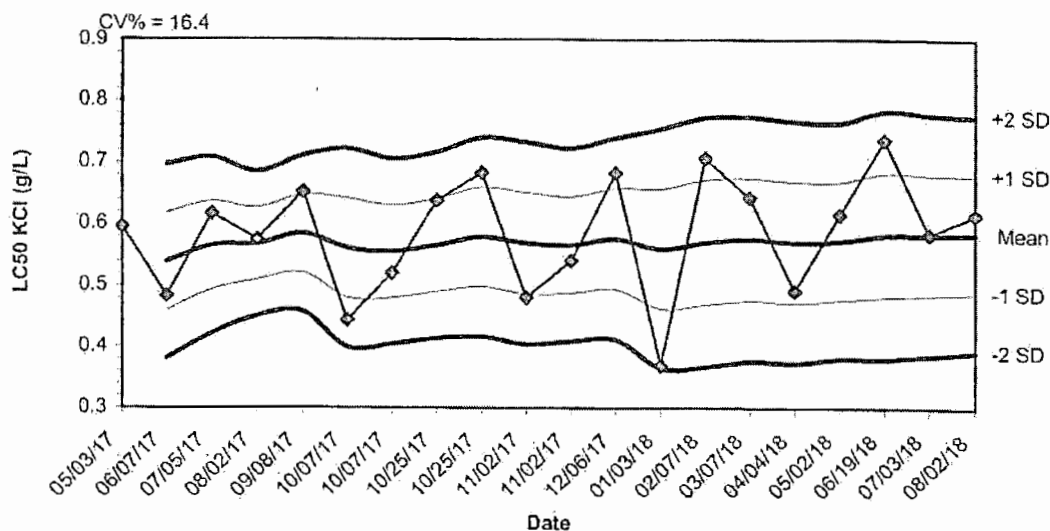
Fathead Minnow 7-d Larval Survival and Growth Test										ESC Lab Sciences	
Analysis ID: 10-0002-2860	Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.4							
Analyzed: 23 Aug-18 12:00	Analysis: Parametric-Control vs Treatments			Status Level: 1							
Batch ID: 10-4042-8418	Test Type: Growth-Survival (7d)			Analyst: Clarissa Moore							
Start Date: 14 Aug-18	Protocol: EPA/821/R-02-013 (2002)			Diluent: Mod-Hard Synthetic Water							
Ending Date: 21 Aug-18	Species: Pimephales promelas			Brine:							
Test Length: 7d 0h	Taxon: Actinopterygii			Source: Aquatic Biosystems, CO						Age: <36	
Sample ID: 07-8801-9648	Code: 2EF839C0			Project:							
Sample Date: 13 Aug-18 08:00	Material: POTW Effluent			Source: NPDES Permit # (XX99999999)							
Receipt Date: 14 Aug-18 08:45	CAS (PC):			Station:							
Sample Age: 16h	Client: Poly Env.- Headland STP										
Comments:											
Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03											
Data Transform											
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C > T		100% passed mean dry biomass-mg				18.25%			
Dunnett Multiple Comparison Test											
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	1.172	1.943	0.072	6	CDF	0.1429	Non-Significant Effect		
Test Acceptability Criteria											
Attribute		Test Stat	TAC Limits		Overlap	Decision					
Control Resp		0.393	Lower: 0.25	Upper: >>	Yes	Passes Criteria					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0037405		0.0037405		1	1.373	0.2857	Non-Significant Effect			
Error	0.0163474		0.0027246		6						
Total	0.0200879				7						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.627	47.47	0.6990	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.8967	0.6451	0.2698	Normal Distribution				
Mean Dry Biomass-mg Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.393	0.3006	0.4854	0.396	0.33	0.45	0.02905	14.78%	0.00%
100		4	0.3497	0.2773	0.4222	0.357	0.288	0.397	0.02277	13.02%	11.00%
Mean Dry Biomass-mg Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	0.45	0.33	0.358	0.434						
100		0.363	0.351	0.397	0.288						

CETIS Analytical Report

Report Date: 23 Aug-18 12:00 (p 2 of 3)
 Test Code/ID: L1017169(PP) / 19-6222-0163

Fathead Minnow 7-d Larval Survival and Growth Test						ESC Lab Sciences					
Analysis ID: 05-5129-8061	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.9.4									
Analyzed: 23 Aug-18 12:00	Analysis: Parametric-Two Sample	Status Level: 1									
Batch ID: 10-4042-8418	Test Type: Growth-Survival (7d)	Analyst: Clarissa Moore									
Start Date: 14 Aug-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water									
Ending Date: 21 Aug-18	Species: Pimephales promelas	Brine:									
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO				Age: <36					
Sample ID: 07-8801-9648	Code: 2EF839C0	Project:									
Sample Date: 13 Aug-18 08:00	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)									
Receipt Date: 14 Aug-18 08:45	CAS (PC):	Station:									
Sample Age: 16h	Client: Poly Env.- Headland STP										
Comments:											
Poly Env.- Headland STP (AL0027014) L1017169 -01,-02,-03											
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C > T		100% passed mean dry biomass-mg				18.25%			
Equal Variance t Two-Sample Test											
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	1.172	1.943	0.072	6	CDF	0.1429	Non-Significant Effect		
Test Acceptability Criteria											
		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	0.393	0.25	>>	Yes	Passes Criteria						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0037405	0.0037405	1	1.373	0.2857	Non-Significant Effect					
Error	0.0163474	0.0027246	6								
Total	0.0200879		7								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.627	47.47	0.6990	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.8967	0.6451	0.2698	Normal Distribution						
Mean Dry Biomass-mg Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.393	0.3006	0.4854	0.396	0.33	0.45	0.02905	14.78%	0.00%
100		4	0.3497	0.2773	0.4222	0.357	0.288	0.397	0.02277	13.02%	11.00%
Mean Dry Biomass-mg Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	0.45	0.33	0.358	0.434						
100		0.363	0.351	0.397	0.288						

Control Chart for August 2018 Acute C. dubia Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/03/17	0.5946					
06/07/17	0.4830	0.5388	0.4599	0.3810	0.6177	0.6966
07/05/17	0.6164	0.5647	0.4931	0.4215	0.6362	0.7078
08/02/17	0.5743	0.5671	0.5084	0.4498	0.6257	0.6843
09/08/17	0.6515	0.5840	0.5207	0.4574	0.6472	0.7105
10/07/17	0.4433	0.5605	0.4799	0.3993	0.6411	0.7218
10/07/17	0.5196	0.5547	0.4795	0.4043	0.6299	0.7051
10/25/17	0.6373	0.5650	0.4895	0.4140	0.6405	0.7160
10/25/17	0.6830	0.5781	0.4973	0.4164	0.6590	0.7398
11/02/17	0.4798	0.5683	0.4860	0.4036	0.6506	0.7329
11/02/17	0.5402	0.5657	0.4872	0.4086	0.6443	0.7228
12/06/17	0.6830	0.5755	0.4933	0.4111	0.6577	0.7399
01/03/18	0.3693	0.5596	0.4624	0.3651	0.6569	0.7542
02/07/18	0.7071	0.5702	0.4687	0.3673	0.6716	0.7730
03/07/18	0.6429	0.5750	0.4755	0.3760	0.6746	0.7741
04/04/18	0.4910	0.5698	0.4713	0.3729	0.6682	0.7666
05/02/18	0.6156	0.5725	0.4765	0.3806	0.6684	0.7644
06/19/18	0.7368	0.5816	0.4808	0.3800	0.6824	0.7832
07/03/18	0.5835	0.5817	0.4837	0.3857	0.6797	0.7776
08/02/18	0.6156	0.5834	0.4877	0.3921	0.6791	0.7747

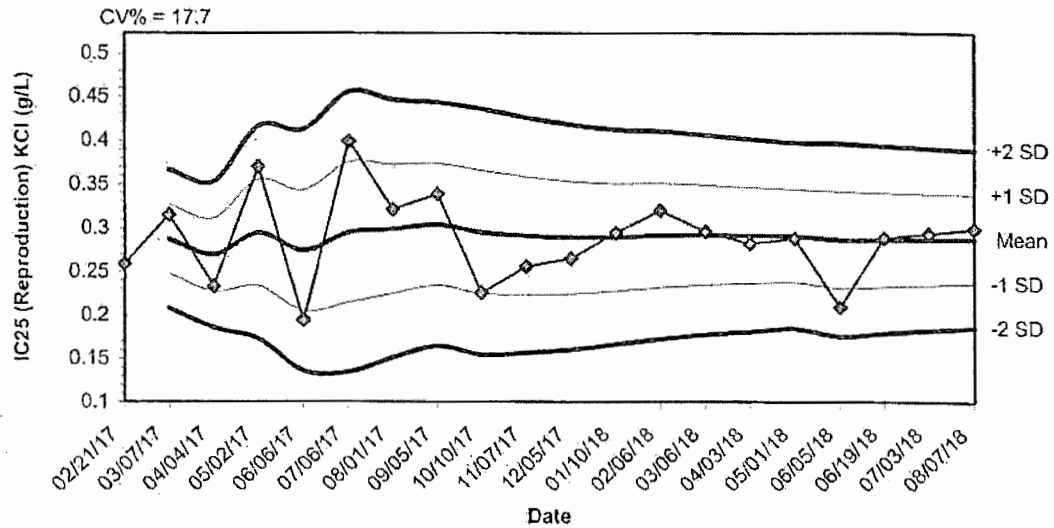


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7510
(615) 758-5859 Fax

August 2018 Reference Toxicant Test

Control Chart for August 2018 Chronic C.dubia Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
02/21/17	0.2590					
03/07/17	0.3150	0.2870	0.2474	0.2078	0.3266	0.3662
04/04/17	0.2329	0.2690	0.2270	0.1851	0.3109	0.3529
05/02/17	0.3693	0.2941	0.2333	0.1726	0.3548	0.4155
06/06/17	0.1938	0.2740	0.2049	0.1358	0.3431	0.4122
07/06/17	0.3988	0.2948	0.2147	0.1346	0.3749	0.4550
08/01/17	0.3209	0.2985	0.2247	0.1509	0.3723	0.4461
09/05/17	0.3382	0.3035	0.2337	0.1640	0.3732	0.4430
10/10/17	0.2255	0.2948	0.2246	0.1544	0.3651	0.4353
11/07/17	0.2558	0.2909	0.2236	0.1562	0.3583	0.4256
12/05/17	0.2650	0.2886	0.2242	0.1598	0.3529	0.4173
01/10/18	0.2944	0.2891	0.2277	0.1663	0.3504	0.4118
02/06/18	0.3203	0.2915	0.2320	0.1726	0.3509	0.4103
03/06/18	0.2956	0.2918	0.2346	0.1775	0.3489	0.4060
04/03/18	0.2819	0.2911	0.2360	0.1809	0.3462	0.4013
05/01/18	0.2879	0.2909	0.2377	0.1845	0.3441	0.3973
06/05/18	0.2093	0.2861	0.2309	0.1757	0.3413	0.3965
06/19/18	0.2882	0.2862	0.2327	0.1791	0.3398	0.3933
07/03/18	0.2935	0.2866	0.2345	0.1825	0.3387	0.3907
08/07/18	0.2994	0.2872	0.2365	0.1857	0.3380	0.3888

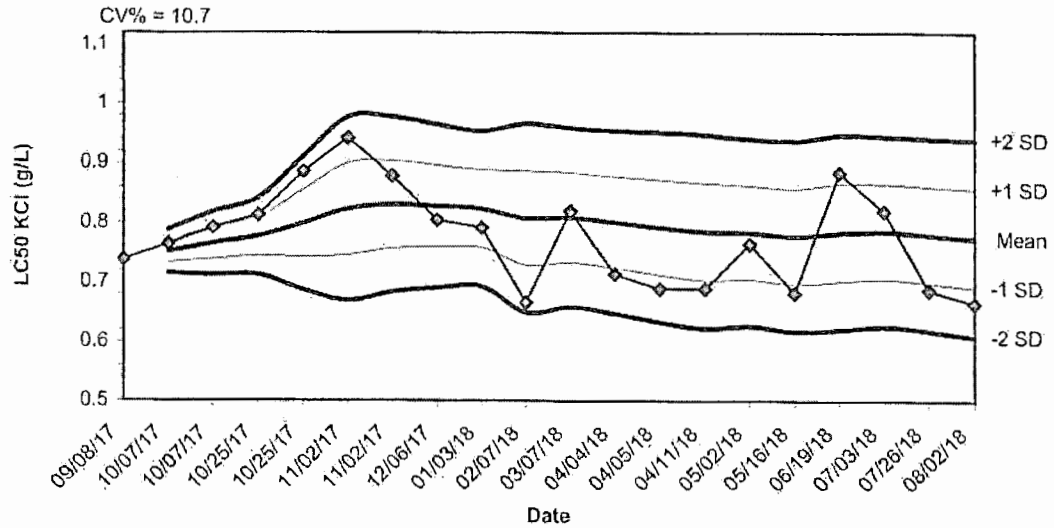


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

August 2018 Reference Toxicant Test

Control Chart for August 2018 Acute Minnow Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
09/08/17	0.7387					
10/07/17	0.7647	0.7517	0.7333	0.7149	0.7701	0.7885
10/07/17	0.7917	0.7650	0.7385	0.7120	0.7915	0.8180
10/25/17	0.8128	0.7770	0.7447	0.7125	0.8092	0.8414
10/25/17	0.8858	0.7987	0.7426	0.6865	0.8549	0.9110
11/02/17	0.9415	0.8225	0.7456	0.6687	0.8994	0.9764
11/02/17	0.8785	0.8305	0.7572	0.6839	0.9039	0.9772
12/06/17	0.8045	0.8273	0.7588	0.6903	0.8958	0.9643
01/03/18	0.7917	0.8233	0.7582	0.6930	0.8885	0.9537
02/07/18	0.6657	0.8076	0.7284	0.6493	0.8867	0.9658
03/07/18	0.8196	0.8087	0.7335	0.6584	0.8838	0.9590
04/04/18	0.7135	0.8007	0.7240	0.6473	0.8775	0.9542
04/05/18	0.6892	0.7921	0.7124	0.6327	0.8719	0.9516
04/11/18	0.6892	0.7848	0.7034	0.6220	0.8662	0.9476
05/02/18	0.7647	0.7835	0.7049	0.6263	0.8620	0.9406
05/16/18	0.6817	0.7771	0.6970	0.6169	0.8572	0.9372
06/19/18	0.8842	0.7834	0.7016	0.6199	0.8652	0.9469
07/03/18	0.8196	0.7854	0.7056	0.6258	0.8652	0.9450
07/26/18	0.6875	0.7803	0.6995	0.6188	0.8610	0.9417
08/02/18	0.6657	0.7745	0.6919	0.6092	0.8572	0.9398

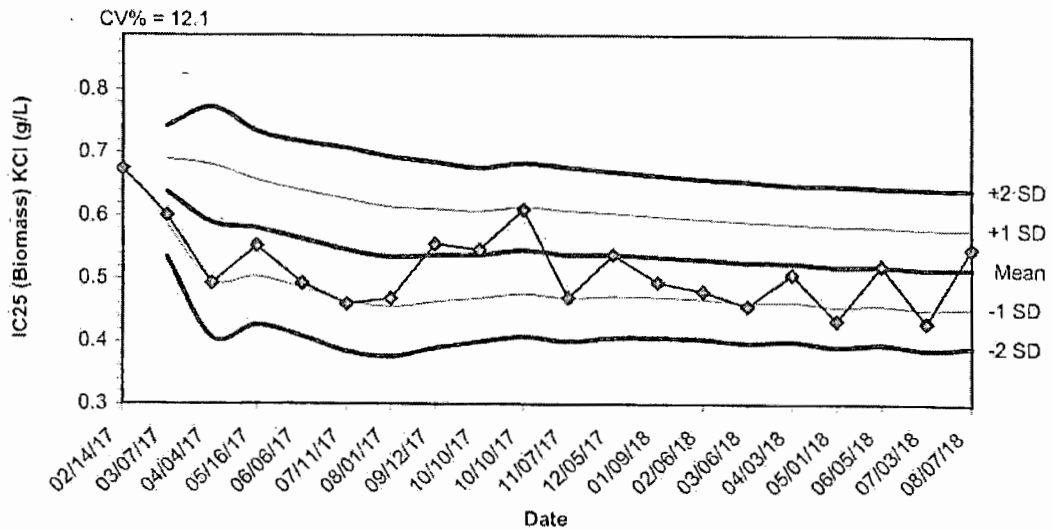


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

August 2018 Reference Toxicant Test

Control Chart for August 2018 Chronic Minnow Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
02/14/17	0.6743					
03/07/17	0.6009	0.6376	0.5857	0.5338	0.6895	0.7414
04/04/17	0.4926	0.5893	0.4979	0.4065	0.6807	0.7721
05/16/17	0.5522	0.5800	0.5031	0.4262	0.6569	0.7338
06/06/17	0.4925	0.5625	0.4853	0.4080	0.6397	0.7170
07/11/17	0.4597	0.5454	0.4645	0.3837	0.6262	0.7070
08/01/17	0.4685	0.5344	0.4551	0.3758	0.6137	0.6930
09/12/17	0.5547	0.5369	0.4632	0.3894	0.6107	0.6845
10/10/17	0.5459	0.5379	0.4688	0.3998	0.6070	0.6761
10/10/17	0.6094	0.5451	0.4761	0.4072	0.6140	0.6829
11/07/17	0.4694	0.5382	0.4689	0.3997	0.6075	0.6767
12/05/17	0.5379	0.5382	0.4721	0.4061	0.6042	0.6702
01/09/18	0.4941	0.5348	0.4704	0.4060	0.5992	0.6636
02/06/18	0.4800	0.5309	0.4673	0.4037	0.5944	0.6580
03/06/18	0.4562	0.5259	0.4617	0.3974	0.5901	0.6543
04/03/18	0.5069	0.5247	0.4625	0.4002	0.5869	0.6492
05/01/18	0.4335	0.5193	0.4551	0.3910	0.5835	0.6477
06/05/18	0.5210	0.5194	0.4572	0.3949	0.5817	0.6440
07/03/18	0.4300	0.5147	0.4508	0.3869	0.5786	0.6425
08/07/18	0.5491	0.5164	0.4538	0.3911	0.5791	0.6418



12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

August 2018 Reference Toxicant Test



Datasheet printed by: KR

Control Water (Tank ID): Y073018

Control Water (Begin Use Date): 8-2-18

Ceriodaphnia dubia Acute Reference Toxicant Test

Month of: August 2018

Test Start Date: 8-2-18

Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050063

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

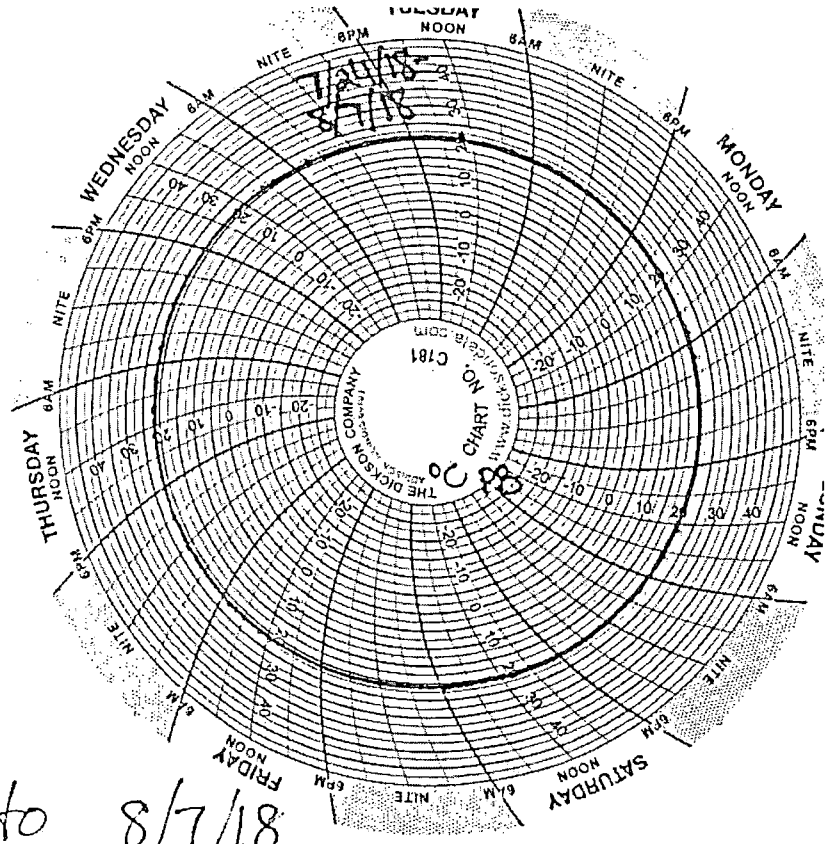
Toxicant (g/L)	Ceriodaphnia	Analyst: <u>NY</u>	Analyst: <u>KR</u>	Analyst: <u>KR</u>	Analyst: <u>VF</u>
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	Ceriodaphnia	24.2 °C	25.0 °C	24.9 °C	24.6 °C
0.0625	Ceriodaphnia	24.3 °C	25.0 °C	25.0 °C	24.4 °C
0.125	Ceriodaphnia	24.5 °C	25.1 °C	24.9 °C	24.9 °C
0.25	Ceriodaphnia	24.5 °C	25.1 °C	24.9 °C	24.4 °C
0.5	Ceriodaphnia	24.6 °C	25.2 °C	24.9 °C	24.3 °C
1	Ceriodaphnia	24.8 °C	25.1 °C	25.0 °C	— °C

Sample ID: *Ceriodaphnia dubia* Acute Reference Toxicant Test

August 2018 Reference Toxicant Test

Chart Devices Used in
Thermo-Kool Walk-in Incubator:

Dickson (small chart)

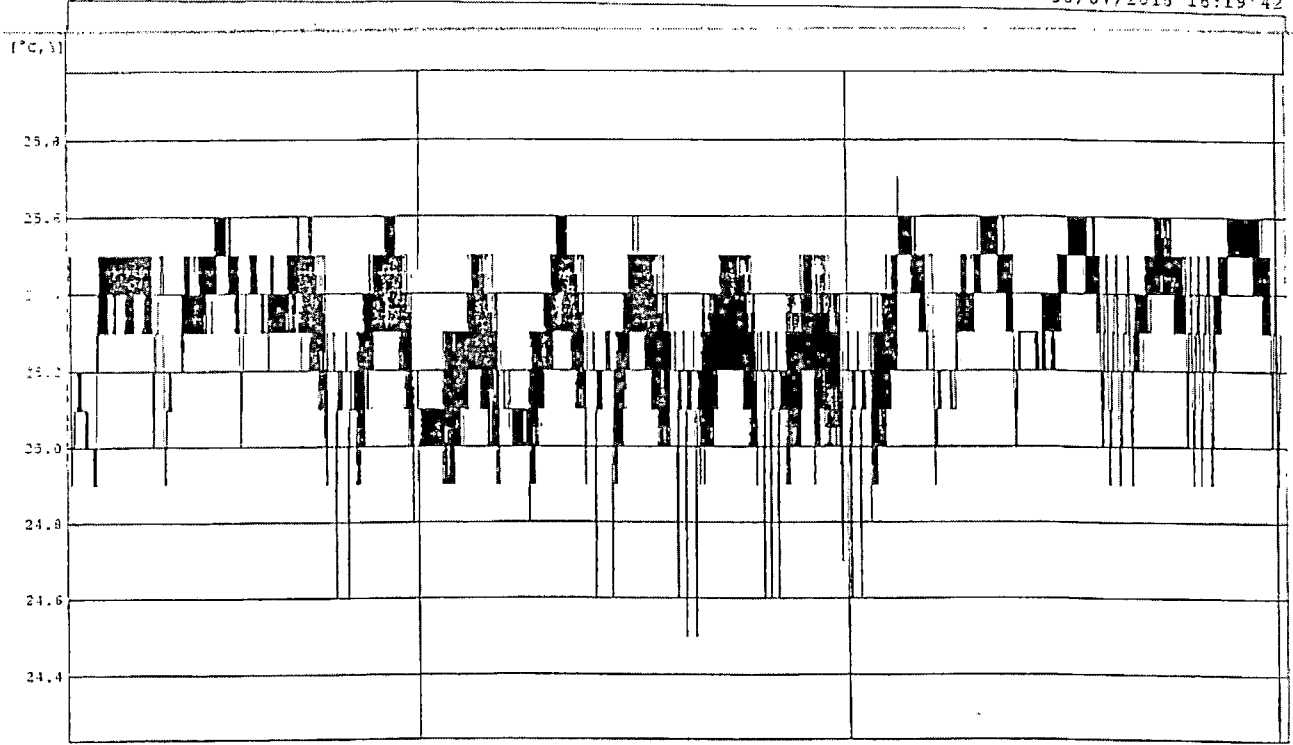


August 2018 Reference Toxicant Test

(Two Weeks) from 7/24/18 to 8/7/18

Thermo Graph for Windows

08/07/2018 16:19:42



A 07/23/18 0:00'00 08/02/18 0:00'00 B 08/07/18 0:00'00

ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.7	24.5	25.3	°C
2	Ch2	2min.	8000	-----	-----	-----	25.7	24.5	25.3	°C
3	Ch1	2min.	8000	-----	-----	-----	25.7	24.6	25.3	°C
4	Ch2	2min.	8000	-----	-----	-----	25.7	24.6	25.3	°C

Cur.A Date : 07/23/2018 22:03'15
Cur.B Date : 08/07/2018 2:45'56
diff. A-B : 14 04:42'41.000

Data Range 07/23/2018 22:03'15-08/07/2018 2:45'56
Calc.Range 07/19/2018 22:32'50-08/07/2018 1:11'33

ACUTE TOXICITY TEST DATA SHEET - *Ceriodaphnia dubia* (water flea)

Client **C. dubia 48-hr Acute Reference Toxicant Test**

Toxicant Used: potassium chloride

Template Name: VENUS
 Month of: August 2018

Begin 8-2-18
 End 8-4-18

Time 12:03 end test +/- 1 hr from start time
 Time 11:23

Test Duration: 48 hours
 Dilution Water: Moderately Hard SDW

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE <i>C. dubia</i>		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	5	5	5
	B: 3	5	5	5
	C: 4	5	5	5
	D: 2	5	5	5
0.0625	A: 2	5	5	5
	B: 1	5	5	5
	C: 6	5	5	5
	D: 5	5	5	5
0.125	A: 3	5	5	4
	B: 6	5	5	5
	C: 2	5	5	5
	D: 1	5	5	5
0.25	A: 4	5	5	5
	B: 2	5	5	5
	C: 5	5	5	5
	D: 6	5	5	5
0.5	A: 5	5	5	5
	B: 4	5	4	2
	C: 3	5	5	4
	D: 4	5	5	5
1.0	A: 6	5	0	0
	B: 5	5	0	0
	C: 1	5	0	0
	D: 3	5	0	0

Check here to confirm final temperatures have been recorded on the temperature benchsheet.

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
7.8	7.9	8.4	8.50
7.8	7.9	8.1	8.20
7.8	8.0	8.2	7.90
7.8	8.0	8.3	7.90
7.8	7.9	8.3	7.90
initial 7.7	7.6	initial 8.6	8.30
7.8	7.6	8.3	8.2

August 2018 Reference Toxicant Test

Conductivity (umhos/cm)	
0 hrs	final
257.1	291.2
458	471
511	567
739	756
1247	1350
initial 1896	2133
1823	2145

Checked By: Ny/KH
 Biologist: KH JK HK
 Time: 12:03 09:55 11:23

Initial Readings By: Ny 10:45


Final Readings By: Ny 10:00

	Total Cl ₂ (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	42	57
1.0 Concentration	< 0.2	49	53

Lot # of KCl Stock Solution:
L 1013553-05
L 1014309-01
072618KCl

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.

C. dubia are < 24 hrs old; *C. dubia* were harvested from tray 073118AD1
 on 8/1/18 @ 16:42 to 8/2/18 @ 08:20
C. dubia were last fed 8/2/18 @ 09:50

* Final readings taken @ 8/3/18 on the concentration due to mortality - KH


CETIS Summary Report

Report Date: 16 Aug-18 15:33 (p 1 of 1)
 Test Code/ID: RTCD080218 / 06-8295-6928

Ceriodaphnia 48-h Acute Survival Test						ESC Lab Sciences					
Batch ID: 00-8702-1948	Test Type: Survival (48h)	Analyst: Clarissa Moore									
Start Date: 02 Aug-18	Protocol: EPA/821/R-02-012 (2002)	Diluent: Mod-Hard Synthetic Water									
Ending Date: 04 Aug-18	Species: Ceriodaphnia dubia	Brine:									
Test Length: 48h	Taxon: Branchiopoda	Source: In-House Culture	Age: <24								
Sample ID: 05-2901-4991	Code: 1F8820CF	Project:									
Sample Date: 02 Aug-18	Material: Potassium chloride	Source: Reference Toxicant									
Receipt Date: 02 Aug-18	CAS (PC):	Station:									
Sample Age: n/a	Client: Reference Toxicant										
Comments: Reference Toxicant August 2018 Ceriodaphnia											
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method	✓ Level	gm/L	95% LCL	95% UCL	TU	S			
20-4743-8192	48h Survival Rate	Spearman-Kärber	LC50	0.6156	0.5405	0.7011		1			
Test Acceptability											
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision				
20-4743-8192	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria				
48h Survival Rate Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.0625		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.125		4	0.9500	0.7909	1.0000	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
0.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.5		4	0.8500	0.5453	1.0000	0.6000	1.0000	0.0957	0.1915	22.53%	15.00%
1		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
48h Survival Rate Detail											
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	1.0000	1.0000	1.0000	1.0000						
0.0625		1.0000	1.0000	1.0000	1.0000						
0.125		0.8000	1.0000	1.0000	1.0000						
0.25		1.0000	1.0000	1.0000	1.0000						
0.5		1.0000	0.6000	0.8000	1.0000						
1		0.0000	0.0000	0.0000	0.0000						

August 2018 Reference Toxicant Test

Reference Toxicant August 2018

NPDES #: KCI

Test Date: August 7-14, 2018

Login #: Potassium Chloride

Tue 8/7/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8	264	8.3	15:40:35	PB
Dup. Control	8	266.8	8.4	15:40:54	PB
0.05	7.9	365	8.5	15:41:34	PB
Dup. 0.05	7.9	362	8.5	15:41:52	PB
0.1	7.9	462	8.5	15:42:16	PB
Dup. 0.1	7.9	463	8.5	15:42:34	PB
0.2	7.9	646	8.4	15:43:00	PB
Dup. 0.2	7.9	651	8.5	15:43:20	PB
0.4	7.9	1018	8.6	15:43:52	PB
Dup. 0.4	7.9	1022	8.6	15:44:10	PB
0.8	7.9	1769	8.6	15:44:37	PB
Dup. 0.8	7.9	1769	8.6	15:45:00	PB

Comments

Control #21

Wed 8/8/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	256.6	9.7	9:35:29	PB
0.05	7.8	360	10	9:35:49	PB
0.1	7.9	465	9.9	9:36:36	PB
0.2	7.9	658	9.8	9:36:55	PB
0.4	7.8	1048	9.7	9:37:16	PB
0.8	7.8	1843	9.7	9:37:38	PB

Ceriodaphnia dubia (water flea)

Finals	pH	DO	Time	Analyst
Control	7.9	8.3	11:26:21	PB
Dup. Control	7.9	8.3	11:26:45	PB
0.05	8	8.3	11:27:25	PB
Dup. 0.05	8	8.4	11:27:42	PB
0.1	8	8.4	11:28:13	PB
Dup. 0.1	8	8.5	11:28:35	PB
0.2	8	8.5	11:28:59	PB
Dup. 0.2	8	8.5	11:29:18	PB
0.4	7.9	8.4	11:29:38	PB
Dup. 0.4	8	8.4	11:29:57	PB
0.8	7.9	8.4	11:30:15	PB
Dup. 0.8	7.9	8.4	11:30:33	PB

Thu 8/9/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8	253.7	9.8	9:14:08	KR
0.05	7.9	363	10	9:15:33	KR
0.1	8	464	9.9	9:15:35	KR
0.2	8	664	9.9	9:17:02	KR
0.4	7.9	1030	9.8	9:17:57	KR
0.8	7.8	1822	9.8	9:18:12	KR

Ceriodaphnia dubia (water flea)

Finals	pH	DO	Time	Analyst
Control	8	8.3	14:17:46	AM
0.05	7.9	8.9	14:18:12	AM
0.1	8	8.9	14:18:55	AM
0.2	8	9	14:19:11	AM
0.4	8	9	14:19:26	AM
0.8	7.9	9	14:19:46	AM

Fri 8/10/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	258.4	10.2	8:54:08	PB
0.05	7.8	362	10.3	8:54:28	PB
0.1	8	467	10.4	8:55:13	PB
0.2	7.9	662	10.5	8:55:31	PB
0.4	7.8	1048	10.5	8:55:50	PB
0.8	7.7	1811	10.5	10:11:16	PB

Ceriodaphnia dubia (water flea)

Finals	pH	DO	Time	Analyst
Control	8	8.2	10:33:31	PB
0.05	8	8.3	10:34:00	PB
0.1	7.9	8.4	10:34:20	PB
0.2	7.9	8.4	10:34:41	PB
0.4	7.9	8.4	10:35:08	PB
0.8	7.9	8.4	10:35:40	PB

August 2018
Reference Toxicant Test

Reference Toxicant August 2018

NPDES #: KCI
 Sat 8/11/18

Test Date: August 7-14, 2018
 Ceriodaphnia dubia (water flea)

Login #: Potassium Chloride

Initials	pH	Cond.	DO	Time	Analyst
Control	7.6	260.1	9.5	8:43:50	PB
0.05	7.5	364	9.8	8:44:09	PB
0.1	7.7	466	9.9	8:44:50	PB
0.2	7.7	652	9.7	8:45:11	PB
0.4	7.7	1031	9.9	8:45:31	PB
0.8	7.7	1777	10.8	8:46:18	PB

Finals	pH	DO	Time	Analyst
Control	7.6	8.5	10:31:21	PB
0.05	7.4	8.5	10:31:49	PB
0.1	7.4	8.5	10:32:13	PB
0.2	7.5	8.5	10:32:53	PB
0.4	7.6	8.4	10:33:27	PB
0.8	/	/	/	PB

Sun 8/12/18

Ceriodaphnia dubia (water flea)

Initials	pH	Cond.	DO	Time	Analyst
Control	7.7	261	9.1	10:11:54	NY
0.05	7.7	366	9.3	10:12:17	NY
0.1	7.8	466	9.4	10:12:53	NY
0.2	7.8	665	9.6	10:13:11	NY
0.4	7.8	1025	9.6	10:13:30	NY
0.8	/	/	/	/	NY

Finals	pH	DO	Time	Analyst
Control	8.1	9	12:40:27	JB
0.05	8	9.1	12:40:47	JB
0.1	7.9	9.1	12:41:39	JB
0.2	7.9	9.2	12:41:59	JB
0.4	7.9	9.1	12:42:23	JB
0.8	/	/	/	JB

Mon 8/13/18

Ceriodaphnia dubia (water flea)

Initials	pH	Cond.	DO	Time	Analyst
Control	/	/	/	/	
0.05	/	/	/	/	
0.1	/	/	/	/	0
0.2	/	/	/	/	0
0.4	/	/	/	/	0
0.8	/	/	/	/	0

Finals	pH	DO	Time	Analyst
Control	8	8.7	17:03:27	CGM
0.05	7.9	8.7	17:04:24	CGM
0.1	7.9	8.7	17:04:45	CGM
0.2	7.9	8.8	17:05:25	CGM
0.4	7.9	8.8	17:05:45	CGM
0.8	/	/	/	CGM

Tue 8/14/18

Ceriodaphnia dubia (water flea)

Initials	pH	Cond.	DO	Time	Analyst
Control	/	/	/	/	
0.05	/	/	/	/	
0.1	/	/	/	/	0
0.2	/	/	/	/	0
0.4	/	/	/	/	0
0.8	/	/	/	/	0

Finals	pH	DO	Time	Analyst
Control	/	/	/	
0.05	/	/	/	
0.1	/	/	/	0
0.2	/	/	/	0
0.4	/	/	/	0
0.8	/	/	/	0

Initials	pH		Conductivity		DO	
	range	mean	range	mean	range	mean
Control	7.6-8	7.9	253.7-266.8	260	8.3-10.2	9.3
0.05	7.5-7.9	7.8	360-366	363	8.5-10.3	9.5
0.1	7.7-8	7.9	462-467	465	8.5-10.4	9.5
0.2	7.7-8	7.9	646-665	657	8.4-10.5	9.5
0.4	7.7-7.9	7.9	1018-1048	1031	8.6-10.5	9.5
0.8	7.7-7.9	7.8	1769-1843	1799	8.6-10.8	9.7

Finals	pH		DO	
	range	mean	range	mean
Control	7.6-8.1	7.9	8.2-9	8.5
0.05	7.4-8	7.9	8.3-9.1	8.6
0.1	7.4-8	7.9	8.4-9.1	8.6
0.2	7.5-8	7.9	8.4-9.2	8.7
0.4	7.6-8	7.9	8.4-9.1	8.6
0.8	7.9-7.9	7.9	8.4-9	8.6

August 2018 Reference Toxicant Test

Reference Toxicant August 2018

Ceriodaphnia dubia (water flea)


Toxicant Potassium Chloride Test Date: August 7-14, 2018 Lot of KCl Used: 080718KCl

Reference Toxicant Control SDW

L# of Control	Control Water Tank ID	Begin Use Date	Alkalinity	Hardness
L1015356-04	B 080618	8/7/2018	50	58
L1015356-05	J 080618	8/7/2002	55	64
L1015356-06	R 080618	8/7/2018	51	57
L1015841-04	Reference Toxicant (0.8% KCl)	8/7/2018	48	63

Temperature Data (in degrees Celsius)

August 2018 Reference Toxicant Test

 Temperature *Ceriodaphnia dubia* (measurement taken in test chambers)

	Tue 8/7/18	Wed 8/8/18	Thu 8/9/18	Fri 8/10/18	Sat 8/11/18	Sun 8/12/18	Mon 8/13/18	Tue 8/14/18						
Analyst:														
	KH	NY	KR	NY	NY	KR	AME	KR	MH	NY	NY	NY		
Control	26.0°C	24.8°C	26.0°C	25.1°C	25.2°C	24.6°C	24.1°C	24.6°C	24.7°C	25.1°C	24.2°C	24.6°C		
0.05	25.8°C	24.8°C	25.6°C	25.1°C	25.6°C	24.4°C	25.1°C	24.6°C	24.8°C	25.1°C	24.4°C	24.6°C		
0.1	25.7°C	24.9°C	25.5°C	25.2°C	25.7°C	24.4°C	24.0°C	24.6°C	24.4°C	25.2°C	24.5°C	24.5°C		
0.2	25.4°C	24.8°C	25.5°C	25.2°C	25.8°C	24.4°C	25.2°C	24.5°C	24.8°C	25.1°C	24.5°C	24.8°C		
0.4	25.0°C	24.8°C	25.6°C	25.1°C	25.8°C	24.5°C	25.3°C	24.5°C	24.6°C	25.2°C	24.6°C	24.8°C		
0.8	24.5°C	24.8°C	25.8°C	25.2°C	25.9°C	24.4°C	25.3°C							

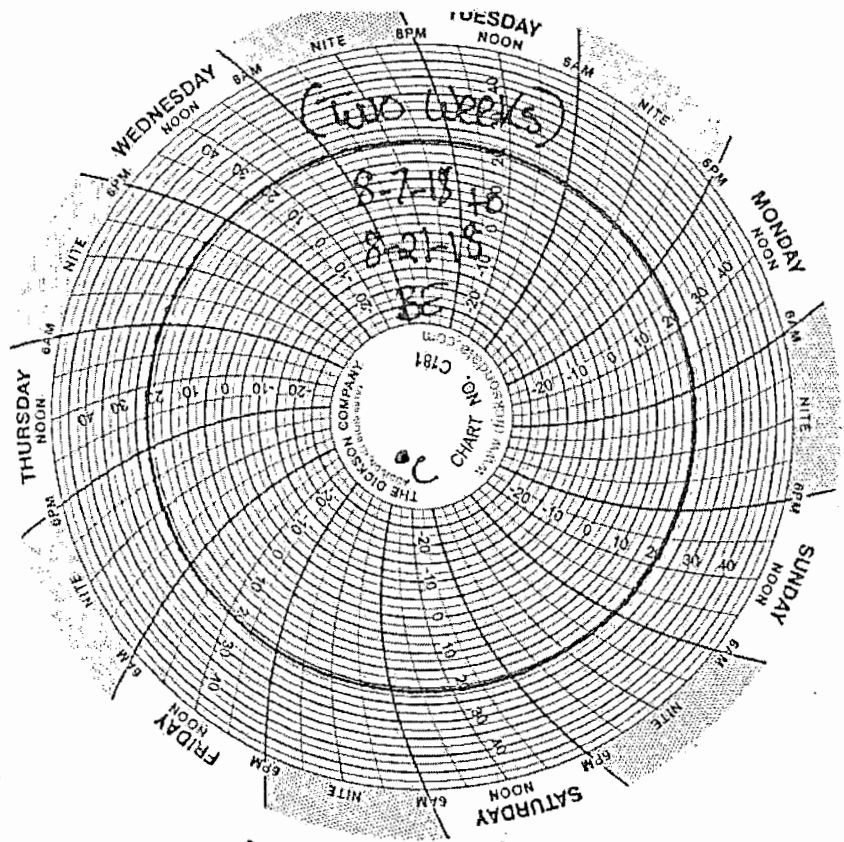
Thermometer serial number:

18050064

Reference Toxicant (C. dubia)

Chart Devices Used in
Thermo-Kool Walk-in Incubator:

Dickson (small chart)

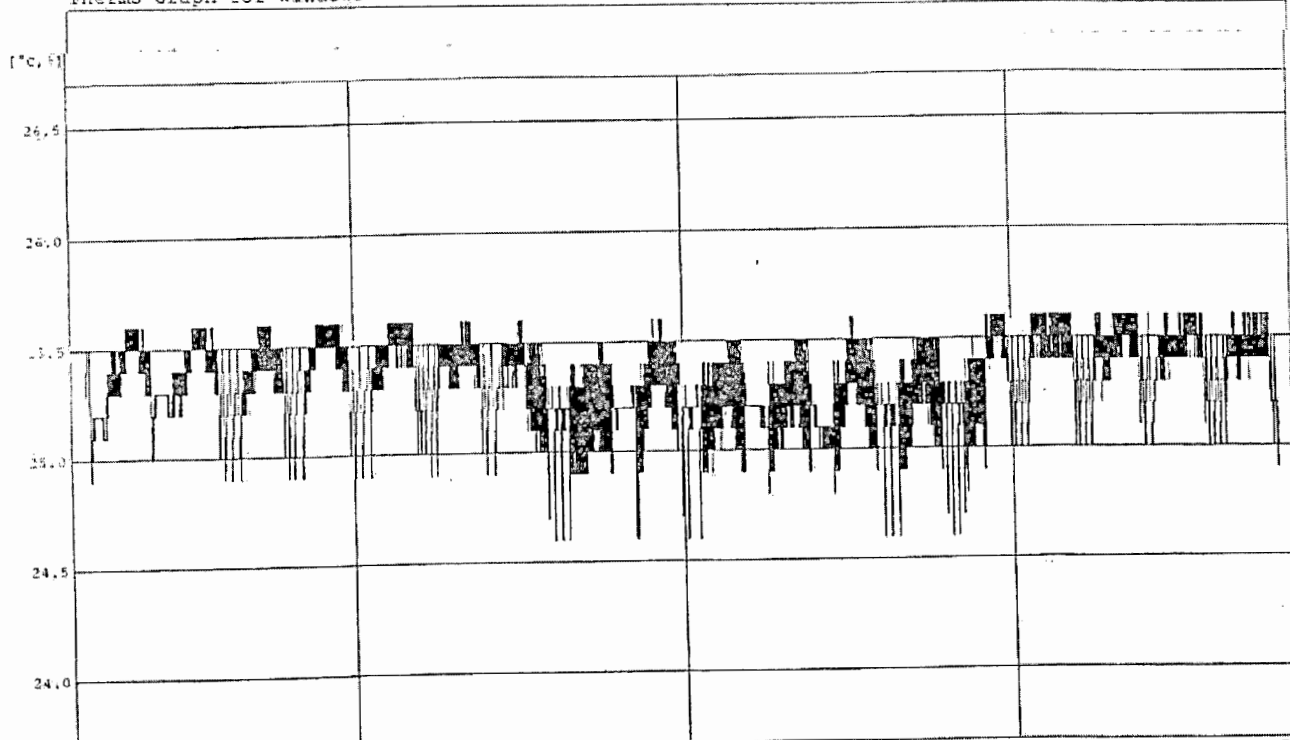


August 2018 Reference Toxicant Test

Week of 8-7-18 to 8-21-18 (Two Weeks) BE

Thermo Graph for Windows

08/21/2018 16:59:59



ch Name	Intvl.	Sample	Cur. A	Cur. B	A<->B	High	Low	Avg.	Unit
1—Ch1	2min.	8000	-----	-----	-----	25.6	24.6	25.3	°C
2—Ch2	2min.	8000	-----	-----	-----	25.6	24.6	25.3	°C
3—Ch1	2min.	8000	25.0	-----	-----	25.6	24.6	25.3	°C
4—Ch2	2min.	8000	25.0	-----	-----	25.6	24.6	25.3	°C

Cur. A Date : 08/07/2018 0:15'00
Cur. B Date : 08/21/2018 1:19'40
diff. A-B : 14 01:04'40.000

Data Range 08/02/2018 17:19'53-08/21/2018 6:25'00
Calc. Range 08/02/2018 22:32'50-08/21/2018 1:12'11

Date(s) and Time(s) of Neonate Harvest: From 16:55 on 8/6/2018 to 22:45 on 8/6/2018

Neonates were Harvested from the Following Tray(s):	073118T1	073118T1	073118T1	073118T1	073118T1	073118T1	073118T1	073118T1	080618XA2	080618XA2	Template Name:
Neonates were Harvested from the Following Cups:	B6	G1	G3	H1	H7	J3	J6	D2	C2	G7	Spruce

Control Water
Canboy Used

Description of Sample Being Analyzed Below:				CONTROL 21 Reference Toxicant August 2018											KCI		
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time	Analyst		A: 1	B: 4	C: 6	D: 4	E: 3	F: 7	G: 6	H: 6	I: 1	J: 2				
BJR 8-6	Tue 8/7/18	16:41	CM	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
BJR 8-6	Wed 8/8/18	10:45	KR	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
BJR 8-6	Thu 8/9/18	9:40	KH	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
BJR 8-6	Fri 8/10/18	10:19	AME	72 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
BJR 8-6	Sat 8/11/18	9:11	MH	96 hrs	4	6	5	6	6	6	3	7	5	5	53	10	
BJR 8-6	Sun 8/12/18	11:19	CGM	120 hrs	5	13	11	10	10	10	10	11	10	14	104	10	
	Mon 8/13/18	16:01	CM	144 hrs	0	15	15	17	16	17	11	15	13	16	135	10	
	Tue 8/14/18			168 hrs											0		
	Wed 8/15/18			192 hrs											0		
Total # of Young Produced:					9	34	31	33	32	33	24	33	28	35	Total Offspring at Renewal	Total Young Produced	
															292	292	

Test Acceptability Criteria:

Survival ≥ 80%?	≥ 15 neonates/female?	≥ 80% 3rd brood?	Is repro CV < 40%?	Control Valid?
YES NO	YES NO	YES NO	YES NO	YES NO
X	X	X	X	X

Description of Sample Being Analyzed Below:				0.05 Reference Toxicant August 2018											KCI	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 3	B: 5	C: 2	D: 7	E: 5	F: 1	G: 3	H: 2	I: 7	J: 6			
	Tue 8/7/18	16:41	CM	initiation	0	0	0	0	0	0	0	0	0	0	0	10
	Wed 8/8/18	10:47	KR	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Thu 8/9/18	9:43	KH	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Fri 8/10/18	10:20	AME	72 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Sat 8/11/18	9:14	MH	96 hrs	7	6	5	6	8	5	5	6	7	5	60	10
	Sun 8/12/18	11:24	CGM	120 hrs	8	11	12	8	11	12	10	12	12	9	105	10
	Mon 8/13/18	16:06	CM	144 hrs	13	16	16	15	15	19	16	19	15	15	159	10
	Tue 8/14/18			168 hrs											0	
	Wed 8/15/18			192 hrs											0	
Total # of Young Produced:					28	33	33	29	34	36	31	37	34	29	Total Offspring at Renewal	Total Young Produced
															324	324

Comments:

August 2018 Reference Toxicant Test

L #: Potassium Chloride

Description of Sample Being Analyzed Below:				0.1 Reference Toxicant August 2018											KCI	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 4	B: 2	C: 3	D: 6	E: 4	F: 2	G: 2	H: 5	I: 4	J: 3			
Tue 8/7/18	16:41	CM	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Wed 8/8/18	10:49	KR	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Thu 8/9/18	9:46	KH	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Fri 8/10/18	10:21	AME	72 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Sat 8/11/18	9:16	MH	96 hrs	5	6	4	6	5	5	4	7	6	6	54	10	
Sun 8/12/18	11:30	CGM	120 hrs	11	12	13	7	12	12	13	12	13	9	114	10	
Mon 8/13/18	16:14	CM	144 hrs	16	18	19	15	14	12	9	14	12	12	141	10	
Tue 8/14/18			168 hrs											0		
Wed 8/15/18			192 hrs											0		
Total # of Young Produced:				32	36	36	28	31	29	26	33	31	27	Total Offspring at Renewal	Total Young Produced	
														309	309	

Description of Sample Being Analyzed Below:				0.2 Reference Toxicant August 2018											KCI	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 5	B: 6	C: 4	D: 5	E: 6	F: 5	G: 5	H: 1	I: 6	J: 1			
Tue 8/7/18	16:41	CM	initiation	0	0	0	0	0	0	0	0	0	0	0	10	
Wed 8/8/18	10:50	KR	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10	
Thu 8/9/18	9:49	KH	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10	
Fri 8/10/18	10:23	AME	72 hrs	0	0	0	0	0	0	0	0	0	0	0	10	
Sat 8/11/18	9:26	MH	96 hrs	3	6	6	5	5	4	6	6	5	5	51	10	
Sun 8/12/18	11:37	CGM	120 hrs	12	12	12	10	6	12	8	11	13	12	108	10	
Mon 8/13/18	16:19	CM	144 hrs	15	17	13	13	10	0	0	15	15	13	111	10	
Tue 8/14/18			168 hrs											0		
Wed 8/15/18			192 hrs											0		
Total # of Young Produced:				30	35	31	28	21	16	14	32	33	30	Total Offspring at Renewal	Total Young Produced	
														270	270	

"X" = indicates dead daphnid; death is confirmed by observation (no appendage movement and no visible heartbeat)

Comments:

41 of 65

August 2018 Reference Toxicant Test

L #: Potassium Chloride

Description of Sample Being Analyzed Below:				0.4 Reference Toxicant August 2018										KCI	
Set-up & Transfer Data		Analyst		Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time			A: 6	B: 3	C: 1	D: 1	E: 2	F: 4	G: 7	H: 3	I: 5	J: 7		
Tue 8/7/18	16:41	CM	initiation	0	0	0	0	0	0	0	0	0	0	0	10
Wed 8/8/18	10:52	KR	24 hrs	0	0	0	0	0	0	0 X	0	0	0	0	9
Thu 8/9/18	9:52	KH	48 hrs	0	0	0	0	0	0	-	0	0	0	0	9
Fri 8/10/18	10:25	AME	72 hrs	0	0	0	0	0	0	-	0	0	0	0	9
Sat 8/11/18	9:29	MH	96 hrs	5	5	6	6	4	4	-	4	5	4	43	9
Sun 8/12/18	11:43	CGM	120 hrs	4 X	8	7	9	8	7	-	7	8	5	63	8
Mon 8/13/18	16:25	CM	144 hrs	-	9	13	18	12	10	-	1	7	16	86	8
Tue 8/14/18			168 hrs	-						-				0	
Wed 8/15/18			192 hrs	-						-				0	
Total # of Young Produced:				9	22	26	33	24	21	0	12	20	25	Total Offspring at Renewal	Total Young Produced
														192	192

Description of Sample Being Analyzed Below:				0.8 Reference Toxicant August 2018										KCI	
Set-up & Transfer Data		Analyst		Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time			A: 7	B: 7	C: 5	D: 2	E: 7	F: 6	G: 1	H: 4	I: 3	J: 5		
Tue 8/7/18	16:41	CM	initiation	0	0	0	0	0	0	0	0	0	0	0	10
Wed 8/8/18	10:54	KR	24 hrs	0 X	0	0 X	0	0 X	0 X	0 X	0 X	0	0 X	0	3
Thu 8/9/18	9:55	KH	48 hrs	0 -	0	0 -	0	0 -	0 -	0 -	0 -	0	0 -	0	3
Fri 8/10/18	10:27	AME	72 hrs	0 -	0 X	0 -	0 X	0 -	0 -	0 -	0 -	0 X	0 -	0	0
Sat 8/11/18			96 hrs	-	-	-	-	-	-	-	-	-	-	0	
Sun 8/12/18			120 hrs	-	-	-	-	-	-	-	-	-	-	0	
Mon 8/13/18			144 hrs	-	-	-	-	-	-	-	-	-	-	0	
Tue 8/14/18			168 hrs	-	-	-	-	-	-	-	-	-	-	0	
Wed 8/15/18			192 hrs	-	-	-	-	-	-	-	-	-	-	0	
Total # of Young Produced:				0	0	0	0	0	0	0	0	0	0	Total Offspring at Renewal	Total Young Produced
														0	0

"X" = indicates dead daphnid; death is confirmed by observation (no appendage movement and no visible heartbeat)

42 of 65

Comments:

August 2018
Reference Toxicant Test

CETIS Summary Report

Report Date: 16 Aug-18 15:45 (p 1 of 2)
 Test Code/ID: RTCD080718 / 12-9399-2131

Ceriodaphnia 7-d Survival and Reproduction Test			ESC Lab Sciences		
Batch ID: 11-3255-5441	Test Type: Reproduction-Survival (7d)	Analyst: Clarissa Moore	Start Date: 07 Aug-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 13 Aug-18	Species: Ceriodaphnia dubia	Brine:	Test Length: 6d 0h	Taxon: Branchiopoda	Source: In-House Culture
Sample ID: 06-1178-4932	Code: 247718E4	Project:	Sample Date: 07 Aug-18	Material: Potassium chloride	Source: Reference Toxicant
Receipt Date: 07 Aug-18	CAS (PC):	Station:	Sample Age: n/a	Client: Reference Toxicant	Age: <24

Comments:
 Reference Toxicant August 2018 C. dubia Chronic

Multiple Comparison Summary								
Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
02-9051-2648	Reproduction	Dunnett Multiple Comparison Test	0.2	0.4	0.2828		23.0%	1

Point Estimate Summary								
Analysis ID	Endpoint	Point Estimate Method	✓ Level	gm/L	95% LCL	95% UCL	TU	S
01-4895-9141	7d Survival Rate	Linear Interpolation (ICPIN)	LC5	0.25	0.22	0.42		1
			LC10	0.3	0.24	0.44		
			LC15	0.35	0.26	0.46		
			LC20	0.4	0.28	0.48		
			LC25	0.425	0.3	0.5		
			LC40	0.5	0.36	0.56		
15-8296-4741	Reproduction	Linear Interpolation (ICPIN)	✓ IC5	0.1402	0.075	0.2272		1
			✓ IC10	0.1804	0.1109	0.265		
			✓ IC15	0.2203	0.1468	0.3189		
			✓ IC20	0.2598	0.1695	0.3925		
			✓ IC25	0.2994	0.1907	0.4237		
			✓ IC40	0.4146	0.3136	0.499		
✓ IC50	0.4788	0.3712	0.5492					

August 2018 Reference Toxicant Test

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
01-4895-9141	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
02-9051-2648	Reproduction	Control Resp	29.2	15	>>	Yes	Passes Criteria
15-8296-4741	Reproduction	Control Resp	29.2	15	>>	Yes	Passes Criteria
02-9051-2648	Reproduction	PMSD	0.2301	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.05		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.1		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.2		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.4		10	0.8000	0.4984	1.0000	0.0000	1.0000	0.1333	0.4216	52.70%	20.00%
0.8		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Reproduction Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	29.2	23.62	34.78	9	35	2.467	7.8	26.71%	0.00%
0.05		10	32.4	30.21	34.59	28	37	0.9684	3.062	9.45%	-10.96%
0.1		10	30.9	28.41	33.39	26	36	1.1	3.479	11.26%	-5.82%
0.2		10	27	21.74	32.26	14	35	2.324	7.348	27.22%	7.53%
0.4		10	19.2	12.33	26.07	0	33	3.036	9.601	50.00%	34.25%
0.8		10	0	0	0	0	0	0	0		100.00%

CETIS Summary Report

Report Date: 16 Aug-18 15:45 (p 2 of 2)
 Test Code/ID: RTCD080718 / 12-9399-2131

Ceriodaphnia 7-d Survival and Reproduction Test											ESC Lab Sciences
7d Survival Rate Detail											
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.05		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.1		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.2		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.4		0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
0.8		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Reproduction Detail											
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	9	34	31	33	32	33	24	33	28	35
0.05		28	33	33	29	34	36	31	37	34	29
0.1		32	36	36	28	31	29	26	33	31	27
0.2		30	35	31	28	21	16	14	32	33	30
0.4		9	22	26	33	24	21	0	12	20	25
0.8		0	0	0	0	0	0	0	0	0	0

August 2018 Reference Toxicant Test



Datasheet printed by: BE
 Control Water (Tank ID): M072518
 Control Water (Begin Use Date): M 7-26-18

Pimephales promelas 48-hr Acute Reference Toxicant Test

Month of: July 2018

Test Start Date: 7-26-18

Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050063

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)		Analyst: <u>KH</u>	Analyst: <u>KD</u>	Analyst: <u>LR</u>	Analyst: <u>KE</u>
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	<i>Pimephales promelas</i>	24.4 °C	24.4 °C	24.1 °C	24.2 °C
0.3	<i>Pimephales promelas</i>	24.4 °C	24.5 °C	24.4 °C	24.2 °C
0.6	<i>Pimephales promelas</i>	24.3 °C	24.5 °C	24.6 °C	24.1 °C
1.2	<i>Pimephales promelas</i>	24.3 °C	24.4 °C	24.6 °C	24.2 °C
2.4	<i>Pimephales promelas</i>	24.1 °C	24.5 °C	24.4 °C	24.2 °C
4.8	<i>Pimephales promelas</i>	24.0 °C	24.4 °C	24.7 °C	24.1 °C

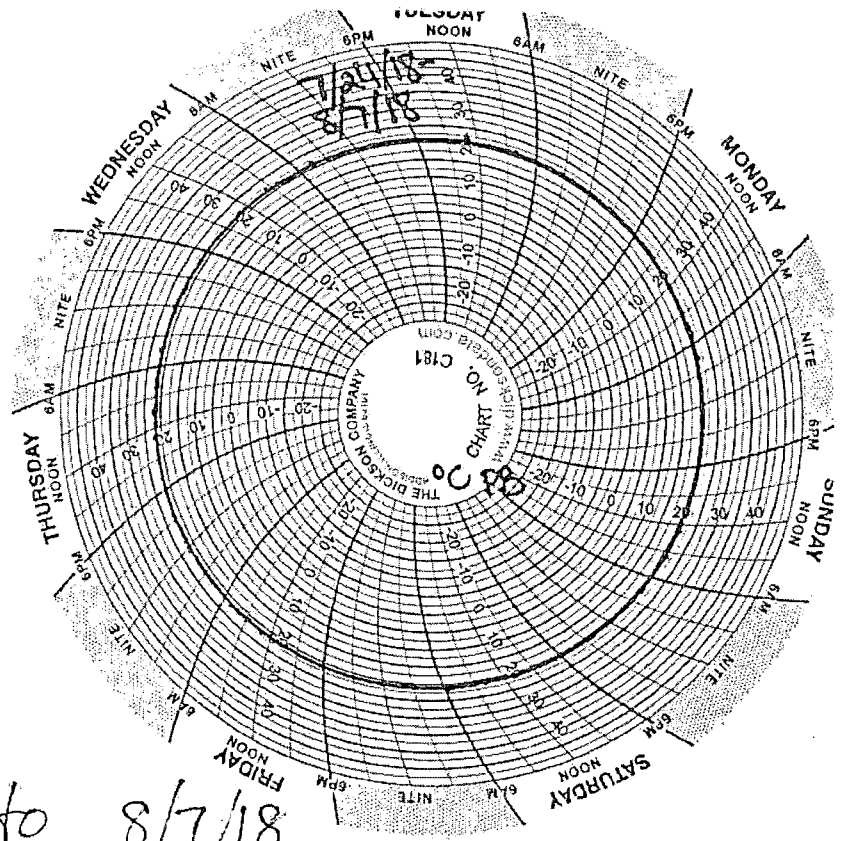
Sample ID: *Pimephales promelas* 48-hr Acute Reference Toxicant Test

August 2018 Reference Toxicant Test

Chart Devices Used in
Thermo-Kool Walk-in Incubator:

Dickson (small chart)

~~Model 4~~

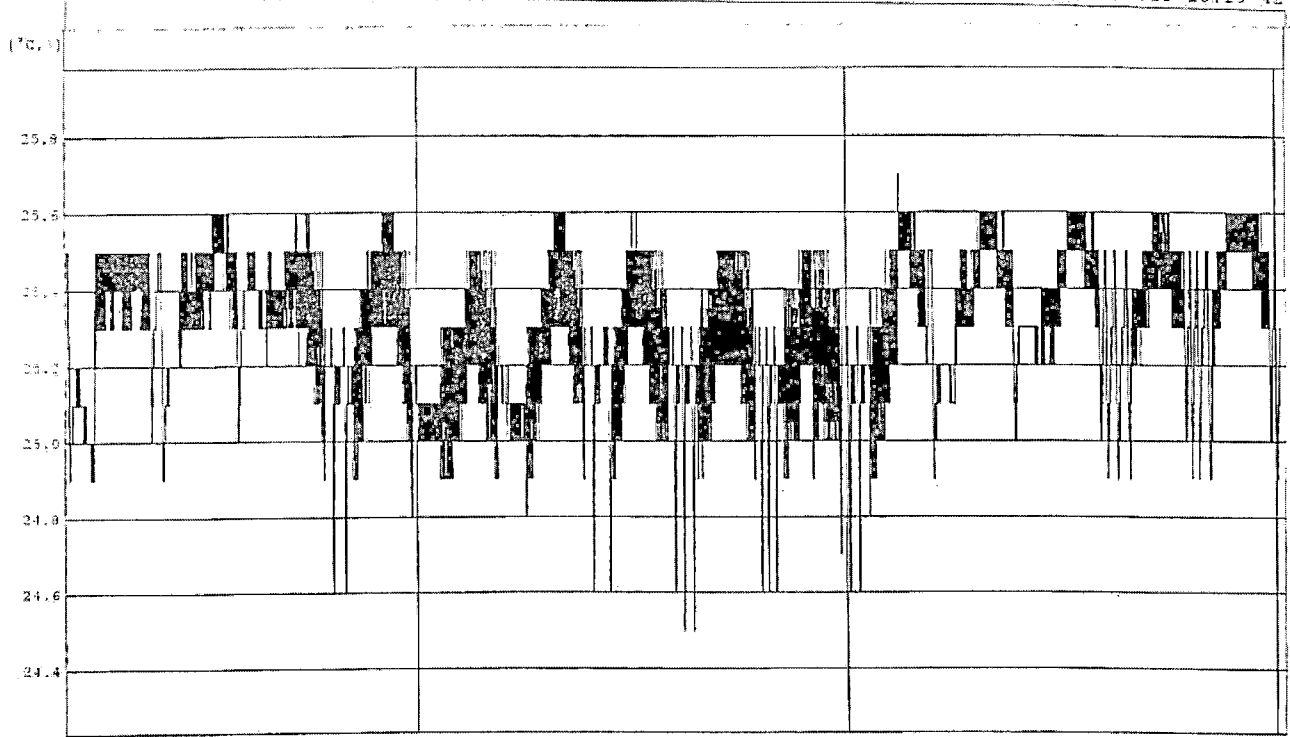


August 2018 Reference Toxicant Test

(Two weeks) from 7/24/18 to 8/7/18

Thermo Graph for Windows

08/07/2018 16:19:42



A 07/23/18 0:00:00 08/02/18 0:00:00 08/07/18 0:00:00 B

ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.7	24.5	25.3	°C
2	Ch2	2min.	8000	-----	-----	-----	25.7	24.5	25.3	°C
3	Ch1	2min.	8000	-----	-----	-----	25.7	24.6	25.3	°C
4	Ch2	2min.	8000	-----	-----	-----	25.7	24.6	25.3	°C

Cur.A Date : 07/23/2018 22:03'15
 Cur.B Date : 08/07/2018 2:45'56
 diff. A-B : 14 04:42'41.000

Data Range 07/23/2018 22:03'15-08/07/2018 2:45'56
 Calc.Range 07/19/2018 22:32'50-08/07/2018 1:11'11

ACUTE TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow)

Client **Minnow 48-hr Acute Reference Toxicant Test**

Toxicant Used: potassium chloride

Month of: **July 2018**

Begin 7-26-18
End 7-28-18

Time 13:30
Time 13:11

*end test +/- 1 hr from start time

Test Duration: 48 hours
Dilution Water: Moderately Hard SDW

48-hr Acute Reference Toxicant Test

August 2018 Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE Minnows		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	10	10	10
	B: 6	10	10	10
0.3	A: 2	10	10	9
	B: 5	10	10	10
0.6	A: 3	10	10	*67
	B: 4	10	9	7
1.2	A: 4	10	0	0
	B: 3	10	0	0
2.4	A: 5	10	0	0
	B: 2	10	0	0
4.8	A: 6	10	0	0
	B: 1	10	0	0

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
initial 7.8	7.9	initial 8.4	8.10
7.8		8.1	
initial 7.7	7.8	initial 8.2	7.90
7.8		7.90	
initial 7.8	7.8	initial 8.2	7.90
7.8		7.90	
initial 7.8	7.7	initial 8.1	7.80
7.8		7.80	
initial 7.8	7.7	initial 8.1	7.70
7.8		7.70	
initial 7.8	7.7 / 7.7	initial 8.0	7.50 / 7.60
7.8		7.60	

Conductivity (umhos/cm)	
0 hrs	final
initial 266.6	286.2
262.0	
initial 828	888
828	
initial 1381	1512
1381	
initial 2490	2715
2490	
initial 4,590	5,030
4,590	
initial 8630	9310 / 9310
8630	

Checked By: JS/KH
Biologist: KH VK PB
Time: 13:30 11 57 13:11

Initial Readings By: KH
Time: 13:25

Final Readings By: PB
Time: 14:04

	Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	45	58
4.8 Concentration	< 0.2	38	59

*7-28-18 PB
L1012411-01
L1012597-01

Lot # of KCl Stock Solution:
KCl072618

47 of 65

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.

Minnows were 3 days old at test initiation and were taken from ESC Lot # 0723184D

Minnows were last fed 7/26/18 @ 10:45.



CETIS Summary Report

Report Date: 02 Aug-18 13:43 (p 1 of 1)
 Test Code/ID: RTPP072618 / 01-5003-9977

Fathead Minnow 48-h Acute Survival Test						ESC Lab Sciences					
Batch ID: 18-6363-7205	Test Type: Survival (48h)	Analyst: Clarissa Moore									
Start Date: 26 Jul-18	Protocol: EPA/821/R-02-012 (2002)	Diluent: Mod-Hard Synthetic Water									
Ending Date: 28 Jul-18	Species: Pimephales promelas	Brine:									
Test Length: 48h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO	Age: 10D								
Sample ID: 12-9535-7593	Code: 4D359699	Project:									
Sample Date: 26 Jul-18	Material: Potassium chloride	Source: NPDES Permit # (XX99999999)									
Receipt Date: 26 Jul-18	CAS (PC):	Station:									
Sample Age: n/a	Client: Reference Toxicant										
Comments:											
Minnow 48-hr Acute Reference Toxicant Test											
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method	✓	Level	gm/L	95% LCL	95% UCL	TU	S		
12-0345-1300	48h Survival Rate	Trimmed Spearman-Kärber		LC50	0.6875	0.5848	0.8083				1
48h Survival Rate Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	2	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.3		2	0.9500	0.3147	1.0000	0.9000	1.0000	0.0500	0.0707	7.44%	5.00%
0.6		2	0.7000	0.7000	0.7000	0.7000	0.7000	0.0000	0.0000	0.00%	30.00%
1.2		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
2.4		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
4.8		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
48h Survival Rate Detail											
Conc-gm/L	Code	Rep 1	Rep 2								
0	D	1.0000	1.0000								
0.3		0.9000	1.0000								
0.6		0.7000	0.7000								
1.2		0.0000	0.0000								
2.4		0.0000	0.0000								
4.8		0.0000	0.0000								

August 2018 Reference Toxicant Test

Pimephales promelas 48-hr Acute Reference Toxicant Test

Month of: August 2018

Test Start Date: 8-2-18

Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050063

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)	Analyst: <u>NW</u>	Analyst: <u>LR</u>	Analyst: <u>LR</u>	Analyst: <u>LR</u>	
					0 hrs
CONTROL	<i>Pimephales promelas</i>	25.8 °C	25.3 °C	24.8 °C	24.6 °C
0.3	<i>Pimephales promelas</i>	25.4 °C	25.3 °C	24.4 °C	24.7 °C
0.6	<i>Pimephales promelas</i>	25.2 °C	25.3 °C	24.6 °C	24.7 °C
1.2	<i>Pimephales promelas</i>	25.1 °C	25.4 °C	24.6 °C	— °C
2.4	<i>Pimephales promelas</i>	24.4 °C	25.2 °C	24.6 °C	— °C
4.8	<i>Pimephales promelas</i>	24.3 °C	25.3 °C	24.6 °C	— °C

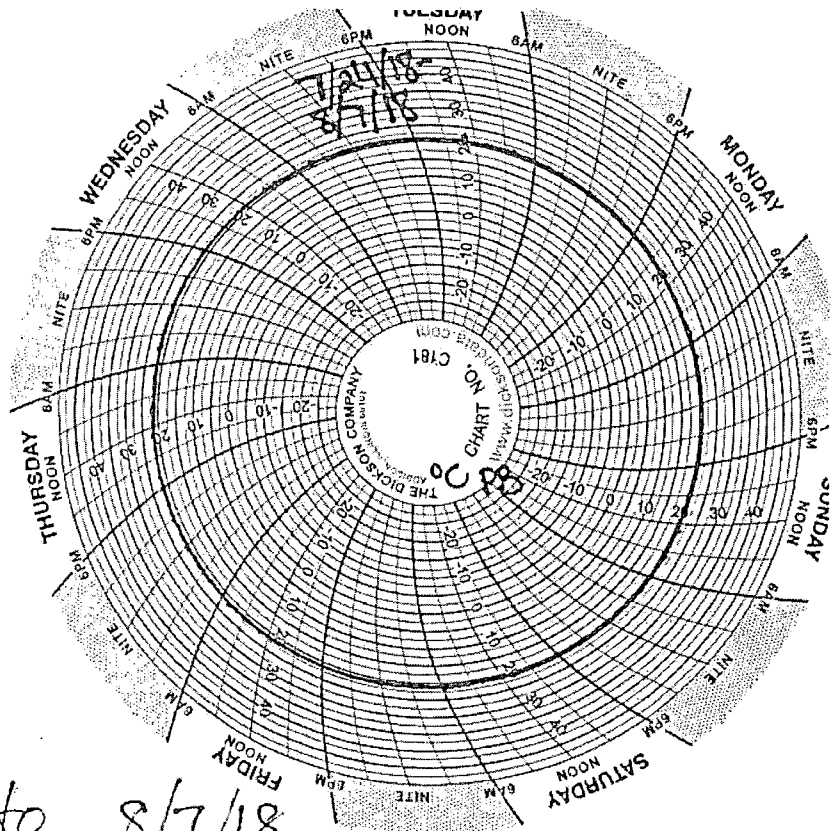
Sample ID: *Pimephales promelas* 48-hr Acute Reference Toxicant Test

August 2018
Reference Toxicant Test

Chart Devices Used in
Thermo-Kool Walk-in Incubator:

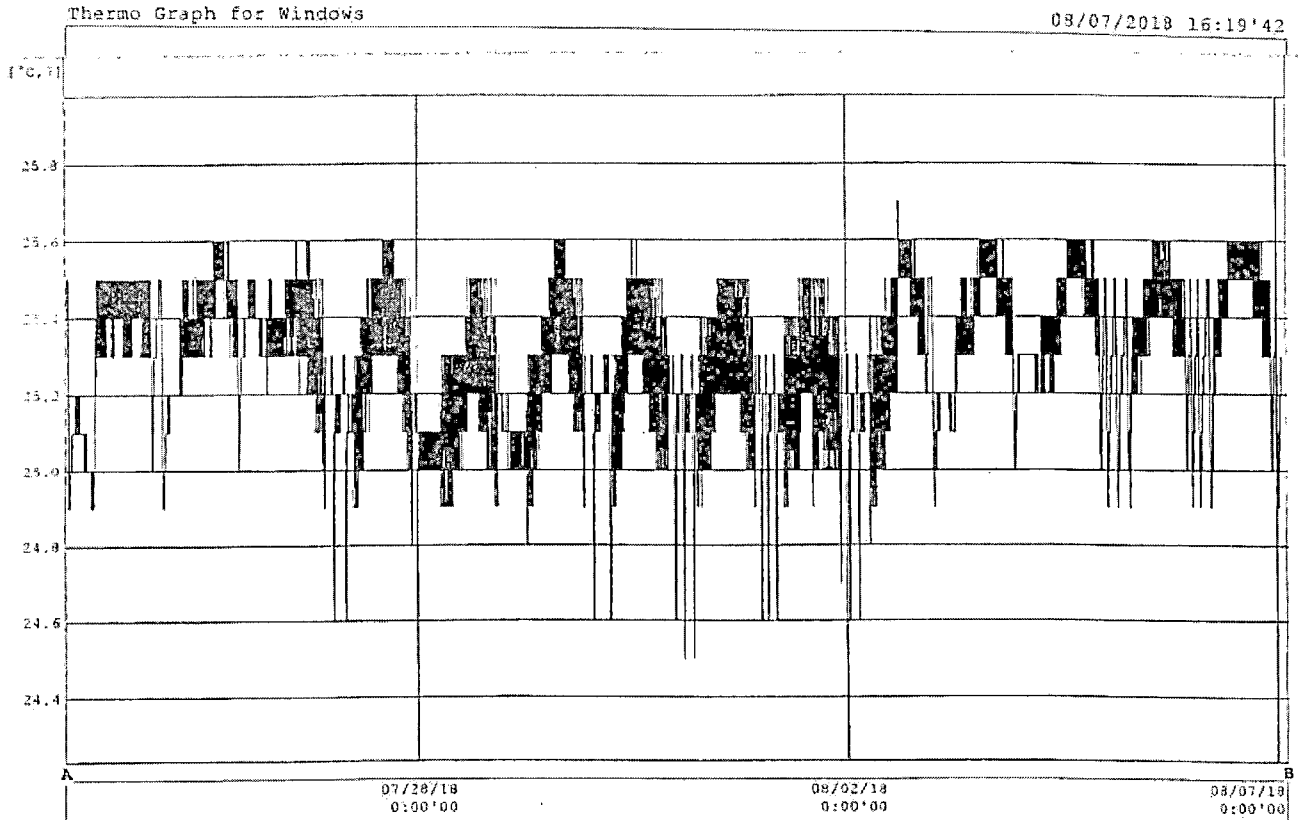
Dickson (small chart)

~~XXXXXXXXXXXXXXXXXXXX~~



August 2018 Reference Toxicant Test

(Two Weeks) from 7/24/18 to 8/7/18



ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.7	24.5	25.3	°C
2	Ch2	2min.	8000	-----	-----	-----	25.7	24.5	25.3	°C
3	Ch1	2min.	8000	-----	-----	-----	25.7	24.6	25.3	°C
4	Ch2	2min.	8000	-----	-----	-----	25.7	24.6	25.3	°C

Cur.A Date : 07/23/2018 22:03'15
 Cur.B Date : 08/07/2018 2:45'56
 diff. A-B : 14 04:42'41.000

Data Range 07/23/2018 22:03'15-08/07/2018 2:45'56
 Calc.Range 07/19/2018 22:32'50-08/07/2018 1:11'11

ACUTE TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow)

VENUS

Client **Minnow 48-hr Acute Reference Toxicant Test**

Toxicant Used: potassium chloride

Month of: **August 2018**

Begin 8-2-18
End 8-4-18

Time 12:17
Time 11:30

Test Duration: 48 hours
Dilution Water: Moderately Hard SDW

48-hr Acute Reference Toxicant Test

August 2018 Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE Minnows		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	10	10	10
	B: 6	10	10	10
0.3	A: 2	10	10	10
	B: 5	10	10	10
0.6	A: 3	10	9	8
	B: 4	10	8	5
1.2	A: 4	10	0	0
	B: 3	10	0	0
2.4	A: 5	10	0	0
	B: 2	10	0	0
4.8	A: 6	10	0	0
	B: 1	10	0	0

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
initial 7.9	7.9	initial 8.0	8.0
initial 7.8	7.8	initial 8.1	7.90
initial 7.8	7.8	initial 8.3	7.80
initial 7.8	*	initial 8.4	*
initial 7.8	7.6	initial 8.20	8.20
initial 7.8	*	initial 8.4	*
initial 7.8	7.7	initial 7.80	7.80
initial 7.7	*-7.7	initial 8.5	* 7.60
7.7	7.7	8.4	7.50

Conductivity (umhos/cm)	
0 hrs	final
initial 254.7	263.3
initial 9.02	9.49
initial 1296	1349
initial 2344	*
2344	2,447
initial 4760	*
4760	4,730
initial 8670	* 8,760
8590	8,740

Initial Readings By: NY 10:50

Final Readings By: AB 12:13

	Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	42	57
4.8 Concentration	< 0.2	44	53

* Final Readings taken 8/3/18 AB
L1013553-025
L1014309-02
Lot # of KCl Stock Solution: KCl 072618
PE8-2718

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.

Minnows were 3 days old at test initiation and were taken from ESC Lot # 073018110
Minnows were last fed 8/2/18 @ 07:45



CETIS Summary Report

Report Date: 16 Aug-18 15:23 (p 1 of 1)
 Test Code/ID: RTPP080218 / 10-2076-3012

Fathead Minnow 48-h Acute Survival Test ESC Lab Sciences

Batch ID: 03-5028-8078	Test Type: Survival (48h)	Analyst: Clarissa Moore
Start Date: 02 Aug-18	Protocol: EPA/821/R-02-012 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 04 Aug-18	Species: Pimephales promelas	Brine:
Test Length: 48h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 3Da

Sample ID: 07-4399-7295	Code: 2C587F6F	Project:
Sample Date: 02 Aug-18	Material: Potassium chloride	Source: Reference Toxicant
Receipt Date: 02 Aug-18	CAS (PC):	Station:
Sample Age: n/a	Client: Reference Toxicant	

Comments:
 Reference Toxicant August 2018 Minnow Acute

Point Estimate Summary									
Analysis ID	Endpoint	Point Estimate Method	✓	Level	gm/L	95% LCL	95% UCL	TU	S
12-8828-3321	48h Survival Rate	Spearman-Kärber		LC50	0.6657	0.5742	0.7718		1

48h Survival Rate Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	2	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.3		2	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.6		2	0.6500	0.0000	1.0000	0.5000	0.8000	0.1500	0.2121	32.64%	35.00%
1.2		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
2.4		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
4.8		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

48h Survival Rate Detail			
Conc-gm/L	Code	Rep 1	Rep 2
0	D	1.0000	1.0000
0.3		1.0000	1.0000
0.6		0.8000	0.5000
1.2		0.0000	0.0000
2.4		0.0000	0.0000
4.8		0.0000	0.0000

August 2018 Reference Toxicant Test

Reference Toxicant August 2018

NPDES #: KCI

Date: August 7-14, 2018

Legin #: Potassium Chloride

Tue 8/7/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	268.9	8.2	15:33:27	PB
Dup. Control	7.9	267.9	8.4	15:33:51	PB
0.1875	7.9	623	8.4	15:34:39	PB
Dup. 0.1875	7.9	619	8.5	15:34:58	PB
0.375	7.9	960	8.5	15:35:21	PB
Dup. 0.375	7.9	960	8.5	15:35:40	PB
0.75	7.9	1623	8.5	15:36:00	PB
Dup. 0.75	7.9	1621	8.6	15:36:18	PB
1.5	7.8	3010	8.5	15:37:02	PB
Dup. 1.5	7.9	2990	8.3	15:37:21	PB
3	7.8	5600	8.3	15:37:47	PB
Dup. 3	7.8	5600	8.3	15:38:07	PB

Comments

Control #22

Wed 8/8/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.8	247.3	9.1	9:31:41	PB
0.1875	7.6	622	9.7	9:32:02	PB
0.375	7.8	992	9.8	9:32:59	PB
0.75	7.9	1677	9.7	9:33:54	PB
1.5	7.8	3040	9.6	9:34:13	PB
3	/	/	/	/	PB

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.9	7.8	9:15:31	PB
Dup. Control	7.9	7.9	9:15:49	PB
0.1875	7.7	7.9	9:16:07	PB
Dup. 0.1875	7.8	7.9	9:16:29	PB
0.375	7.8	7.9	9:17:00	PB
Dup. 0.375	7.8	7.6	9:22:28	PB
0.75	7.7	7.7	9:22:57	PB
Dup. 0.75	7.7	7.6	9:23:14	PB
1.5	7.7	7.7	9:23:53	PB
Dup. 1.5	7.8	7.8	9:24:10	PB
3	7.7	7.8	9:24:30	PB
Dup. 3	7.8	7.8	9:24:52	PB

Thu 8/9/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8.1	238.7	7.8	9:09:16	KR
0.1875	7.9	592	9.2	9:10:12	KR
0.375	7.8	971	10	9:10:47	KR
0.75	8	1677	10.2	9:11:56	KR
1.5	/	/	/	/	KR
3	/	/	/	/	KR

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.7	7.5	9:04:40	KR
0.1875	7.6	7.5	9:05:41	KR
0.375	7.7	7.3	9:07:03	KR
0.75	7.6	7.4	9:07:21	KR
1.5	/	/	/	KR
3	/	/	/	KR

Fri 8/10/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	253.6	9.7	8:51:14	PB
0.1875	7.9	615	9.9	8:52:10	PB
0.375	7.9	969	10.3	8:52:30	PB
0.75	8	1662	10.4	8:53:13	PB
1.5	/	/	/	/	PB
3	/	/	/	/	PB

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.8	7.7	8:31:33	PB
0.1875	7.6	7.7	8:31:52	PB
0.375	7.8	7.8	8:32:37	PB
0.75	7.7	7.9	8:32:56	PB
1.5	/	/	/	PB
3	/	/	/	PB

August 2018 Reference Toxicant Test

Reference Toxicant August 2018

NPDES #:
 Sat 8/11/18

KCI

Date: August 7-14, 2018

Login #: Potassium Chloride

Initials

	pH	Cond.	DO	Time	Analyst
Control	7.5	253.3	9.3	8:40:09	PB
0.1875	7.7	624	9.5	8:41:07	PB
0.375	7.3	961	9.7	8:41:46	PB
0.75	8	1635	9.8	8:42:29	PB
1.5					PB
3					PB

Pimephales promelas (fathead minnow)

Finals

	pH	DO	Time	Analyst
Control	7.6	7.6	8:37:06	PB
0.1875	7.7	7.8	8:37:50	PB
0.375	7.7	7.8	8:38:08	PB
0.75	7.8	7.7	8:38:37	PB
1.5				PB
3				PB

Sun 8/12/18

Initials

	pH	Cond.	DO	Time	Analyst
Control	7.5	253.3	9.4	10:14:26	NY
0.1875	7.7	624	9.3	10:16:54	NY
0.375	7.8	958	9.3	10:17:24	NY
0.75	8.1	1646	9.3	10:18:06	NY
1.5					NY
3					NY

Pimephales promelas (fathead minnow)

Finals

	pH	DO	Time	Analyst
Control	7.7	8.4	11:49:07	JB
0.1875	7.7	8.5	11:51:57	JB
0.375	7.6	8.5	11:52:35	JB
0.75	7.7	8.6	11:53:29	JB
1.5				JB
3				JB

Mon 8/13/18

Initials

	pH	Cond.	DO	Time	Analyst
Control	7.4	264.5	9.3	10:18:21	NY
0.1875	7.5	967	9.5	10:26:31	NY
0.375	7.5	640	9.6	10:28:42	NY
0.75	7.9	1631	9.6	10:30:39	NY
1.5					NY
3					NY

Pimephales promelas (fathead minnow)

Finals

	pH	DO	Time	Analyst
Control	7.7	8.3	12:22:11	JB
0.1875	7.7	8.2	12:23:33	JB
0.375	7.6	8.3	12:23:53	JB
0.75	7.8	8.4	12:25:10	JB
1.5				JB
3				JB

Tue 8/14/18

Pimephales promelas (fathead minnow)

Finals

	pH	DO	Time	Analyst
Control	7.3	7.4	8:41:43	PB
0.1875	7.4	7.1	8:42:26	PB
0.375	7.4	7	8:42:45	PB
0.75	7.5	6.9	8:43:28	PB
1.5				PB
3				PB

Initials

	pH		Conductivity		DO	
	range	mean	range	mean	range	mean
Control	7.4-8.1	7.8	238.7-268.9	256	7.8-9.7	8.9
0.1875	7.5-7.9	7.8	592-967	661	8.4-9.9	9.3
0.375	7.5-7.9	7.8	640-992	926	8.5-10.3	9.5
0.75	7.9-8.1	8.0	1621-1677	1647	8.5-10.4	9.5
1.5	7.8-7.9	7.8	1990-3040	3013	8.3-9.6	8.8
3	7.8-7.8	7.8	5600-5600	5600	8.3-8.3	8.3

Finals

Pimephales promelas (fathead minnow)

	pH		DO	
	range	mean	range	mean
Control	7.3-7.9	7.7	7.4-8.4	7.8
0.1875	7.4-7.8	7.7	7.1-8.5	7.8
0.375	7.4-7.8	7.7	7.8-8.5	7.8
0.75	7.5-7.8	7.7	6.9-8.6	7.8
1.5	7.7-7.8	7.8	7.7-7.8	7.8
3	7.7-7.8	7.8	7.8-7.8	7.8

August 2018 Reference Toxicant Test

Pimephales promelas (fathead minnow) Reference Toxicant August 2018

Toxicant: potassium chloride (KCl) Test Date: August 7-14, 2018

Reference Toxicant Control

L# of Control	Control Water Tank ID	Begin Use Date	Alkalinity (mg/L)	Hardness (mg/L)
L1015356-04	B 080618	Tue 8/7/18	50	58
L1015356-05	J 080618	Tue 8/7/18	55	64
L1015356-06	R 080618	Tue 8/7/18	51	57

Reference Toxicant (KCl Stock Solution)

Begin Use Date	Alkalinity (mg/L)	Hardness (mg/L)	L# of 3% KCl
Tue 8/7/18	47	65	L1015841-05

Lot # of KCl Stock Solution used: 080718KCl



Temperature *Pimephales promelas* (measurement taken in test chambers)

	Tue 8/7/18	Wed 8/8/18		Thu 8/9/18		Fri 8/10/18		Sat 8/11/18		Sun 8/12/18		Mon 8/13/18	Tue 8/14/18	
	Analyst	Analyst		Analyst		Analyst		Analyst		Analyst		Analyst	Analyst	
	KH	NY	KR	NY	NY	KR	AME	KR	MH	NY	NY	NY	CM	NY
Control	25.9°C	25.0°C	25.8°C	24.6°C	26.0°C	25.0°C	24.9°C	25.0°C	25.2°C	25.1°C	24.3°C	24.6°C	24.5°C	24.6°C
0.1875	26.0°C	25.0°C	25.8°C	24.6°C	25.9°C	24.8°C	24.9°C	25.0°C	25.0°C	25.1°C	24.5°C	24.6°C	24.5°C	24.8°C
0.375	25.8°C	25.0°C	25.9°C	24.8°C	25.9°C	24.8°C	24.1°C	24.8°C	25.3°C	25.2°C	24.6°C	24.5°C	24.6°C	24.7°C
0.75	25.9°C	25.1°C	25.6°C	24.9°C	25.8°C	24.8°C	24.2°C	24.8°C	25.0°C	25.1°C	24.5°C	24.8°C	24.7°C	24.8°C
1.5	26.0°C	25.1°C	-	/	/	/	/	/	/	/	/	/	/	/
3	26.0°C	25.0°C	-	/	/	/	/	/	/	/	/	/	/	/
	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)

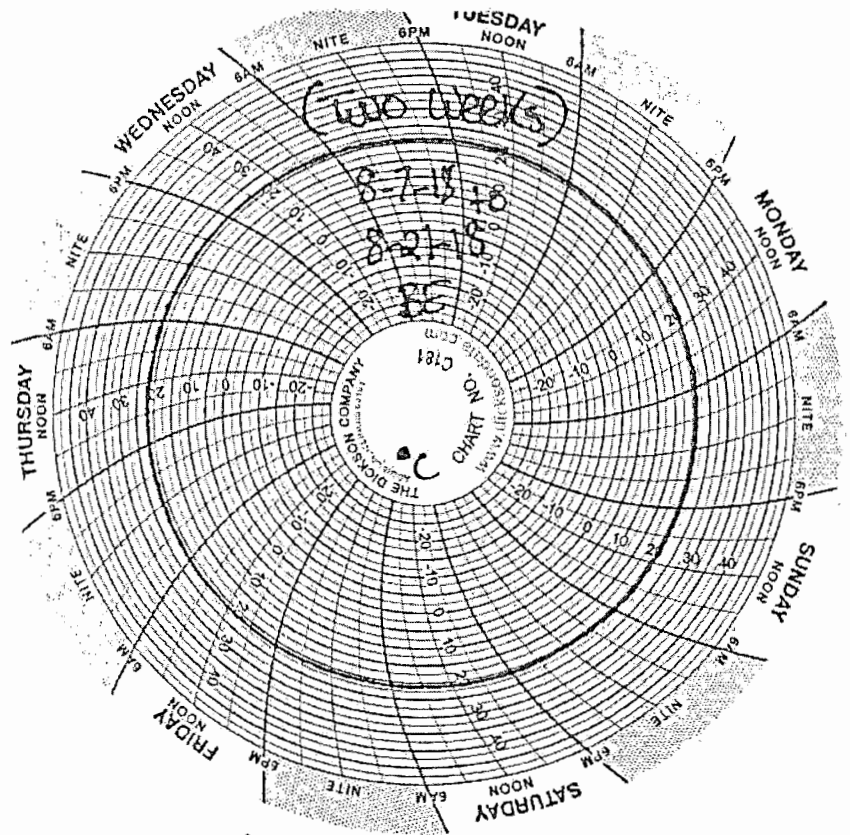
Thermometer serial number: 87870092

Reference Toxicant August 2018

August 2018 Reference Toxicant Test

Chart Devices Used in
Thermo-Kool Walk-in Incubator:

Dickson (small chart)

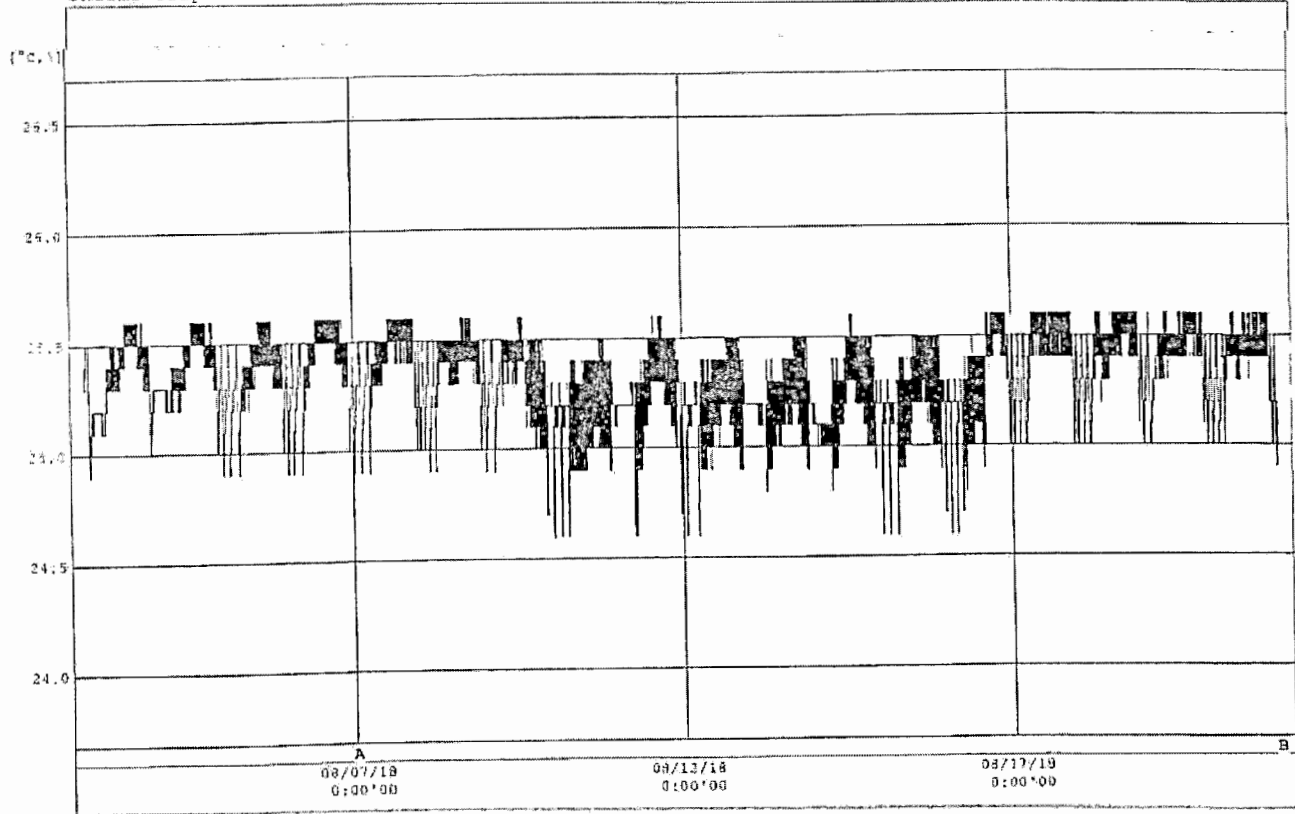


August 2018 Reference Toxicant Test

Week of 8-7-18 to 8-21-18 (Two Weeks) BE

Thermo Graph for Windows

08/21/2018 16:59:59



ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.6	25.3	°C
2	Ch2	2min.	8000	-----	-----	-----	25.6	24.6	25.3	°C
3	Ch1	2min.	8000	25.0	-----	-----	25.6	24.6	25.3	°C
4	Ch2	2min.	8000	25.0	-----	-----	25.6	24.6	25.3	°C

Cur.A Date : 08/07/2018 0:15'00.
Cur.B Date : 08/21/2018 1:19'40.
diff. A-B : 14 01:04'40.000

Data Range 08/02/2018 17:19'53-08/21/2018
Calc.Range 08/02/2018 22:32'50-08/21/2018

6:25'05
1:12'11

TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow) 7-Day Survival & Weight Data

Reference Toxicant August 2018

Test Date: August 7-14, 2018

NPDES #: KCI

NUMBER OF SURVIVORS									
Sample Distribution		Sample #1 Tues/Wed		Sample #2 Thurs/Fri		Sample #3 Sat/Sun/Mon			
Day of the Week and Date		Tue 8/7/18	Wed 8/8/18	Thu 8/9/18	Fri 8/10/18	Sat 8/11/18	Sun 8/12/18	Mon 8/13/18	Tue 8/14/18
Effluent Conc. In%	ID of Rep.	0 hours	24 hours	48 hours	72 hours	96 hours	120 hours	144 hours	168 hours
Control 21	A: 1	10	10	10	10	10	10	10	10
	B: 4	10	10	10	10	10	10	10	10
	C: 2	10	10	10	10	10	10	10	10
	D: 5	10	10	10	10	10	10	10	10
0.1875	A: 2	10	10	10	10	10	10	10	10
	B: 6	10	10	10	10	10	10	10	10
	C: 1	10	10	10	10	10	10	10	10
	D: 2	10	10	10	10	10	10	10	10
0.375	A: 3	10	10	10	10	10	10	10	10
	B: 1	10	10	10	10	10	10	10	10
	C: 5	10	10	10	10	10	10	10	10
	D: 6	10	10	10	10	10	10	10	10
0.75	A: 4	10	7	5	5	5	4	4	4
	B: 3	10	9	6	5	5	3	3	3
	C: 6	10	6	6	6	6	5	4	4
	D: 4	10	10	6	6	6	5	5	4
1.5	A: 5	10	0	0	0	0	0	0	0
	B: 5	10	0	0	0	0	0	0	0
	C: 4	10	0	0	0	0	0	0	0
	D: 1	10	0	0	0	0	0	0	0
3	A: 6	10	0	0	0	0	0	0	0
	B: 2	10	0	0	0	0	0	0	0
	C: 3	10	0	0	0	0	0	0	0
	D: 3	10	0	0	0	0	0	0	0
Initials of Analyst Checking Survival		KH	KR	NY	AME	MH	NY	CM	KH
Time that Minnows were Examined:		16:27	11:17	10:33	9:58	9:43	10:44	11:05	10:56
Carboy used to dilute sample:		BJR 8-6	BJR 8-6	BJR 8-6	BJR 8-6	BJR 8-6	BJR 8-6	BJR 8-6	BJR 8-6

WEIGHT DATA for SURVIVING MINNOWS							
	Weight Empty Boat (mg)	Boat w/ Fish (mg)	Weight of Larvae (mg)	Mean Weight of Larvae (mg)	Total of Mean	Mean per Concentration	
Control	A	1293.72	1298.98	5.26	0.526	1.5180	0.3795
	B	1296.26	1299.15	2.89	0.289		
	C	1306.4	1309.92	3.52	0.352		
	D	1297.69	1301.2	3.51	0.351		
0.1875	A	1296.8	1301.94	5.14	0.514	1.8150	0.4538
	B	1294.83	1300.04	5.21	0.521		
	C	1310.08	1313.81	3.73	0.373		
	D	1305.46	1309.53	4.07	0.407		
0.375	A	1301.28	1305.97	4.69	0.469	1.9180	0.4795
	B	1303.14	1308.22	5.08	0.508		
	C	1297.33	1302.27	4.94	0.494		
	D	1295.38	1299.85	4.47	0.447		
0.75	A	1297.76	1300.06	2.3	0.23	0.8080	0.2020
	B	1299.99	1301.79	1.8	0.18		
	C	1288.83	1291.06	2.23	0.223		
	D	1295.99	1297.74	1.75	0.175		
1.5	A	0	0		#VALUE!	#####	#####
	B	0	0		#VALUE!		
	C	0	0		#VALUE!		
	D	0	0		#VALUE!		
3	A	0	0		#VALUE!	#####	#####
	B	0	0		#VALUE!		
	C	0	0		#VALUE!		
	D	0	0		#VALUE!		
Analyst:	CGM	PB					

COMMENTS: Minnows used in this test are from ESC Lot#

080618HD Minnows were hatched on

8/6/2018

Survival \geq 80%?	\geq 0.25mg Average Weight in Surviving Controls?	Is (growth) CV < 40%?	Control Valid?
YES NO	YES NO	YES NO	YES NO
X	X	X	X

Date & Time Put in Oven	Date & Time Removed
8-14-18 @ 11:13	08-15-18 @ 11:15

Oven Temp:	73°C	Oven Temp:	73°C
------------	------	------------	------

Analyst:	KH	Analyst:	PB
----------	----	----------	----

Login #: Potassium Chloride

57 of 65

**August 2018
Reference Toxicant Test**

CETIS Summary Report

Report Date: 16 Aug-18 15:56 (p 1 of 2)
 Test Code/ID: RTPP080718 / 09-7647-6757

Fathead Minnow 7-d Larval Survival and Growth Test **ESC Lab Sciences**

Batch ID: 03-7954-7655	Test Type: Growth-Survival (7d)	Analyst: Clarissa Moore
Start Date: 07 Aug-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 14 Aug-18	Species: Pimephales promelas	Brine:
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <36

Sample ID: 21-4547-9914	Code: 7FE16CEA	Project:
Sample Date: 07 Aug-18	Material: Potassium chloride	Source: Reference Toxicant
Receipt Date: 07 Aug-18	CAS (PC):	Station:
Sample Age: n/a	Client: Reference Toxicant	

Comments:
 Reference Toxicant August 2018 P. promelas Chronic

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
04-5025-3085	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	0.375	0.75	0.5303		28.2%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	gm/L	95% LCL	95% UCL	TU	S
13-3014-0857	7d Survival Rate	Linear Interpolation (ICPIN)	✓ LC5	0.405	0.4014	0.407		1
			✓ LC10	0.435	0.4279	0.439		
			✓ LC15	0.465	0.4543	0.471		
			✓ LC20	0.495	0.4808	0.503		
			✓ LC25	0.525	0.5072	0.535		
			✓ LC40	0.615	0.5866	0.631		
09-1813-8155	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	IC5	0.4098	0.3764	0.4174		1
			IC10	0.4447	0.4107	0.4599		
			IC15	0.4795	0.444	0.5023		
			IC20	0.5143	0.4778	0.5447		
			IC25	0.5491	0.5112	0.5871		
			IC40	0.6536	0.6019	0.7144		
IC50	0.7233	0.6628	0.8258					

August 2018 Reference Toxicant Test

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
13-3014-0857	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria	
04-5025-3085	Mean Dry Biomass-mg	Control Resp	0.3795	0.25	>>	Yes	Passes Criteria	
09-1813-8155	Mean Dry Biomass-mg	Control Resp	0.3795	0.25	>>	Yes	Passes Criteria	
04-5025-3085	Mean Dry Biomass-mg	PMSD	0.2825	0.12	0.3	Yes	Passes Criteria	

7d Survival Rate Summary

Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.1875		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.375		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.75		4	0.3750	0.2954	0.4546	0.3000	0.4000	0.0250	0.0500	13.33%	62.50%
1.5		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
3		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Mean Dry Biomass-mg Summary

Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.3795	0.2172	0.5418	0.289	0.526	0.05101	0.102	26.88%	0.00%
0.1875		4	0.4538	0.3345	0.573	0.373	0.521	0.03748	0.07496	16.52%	-19.57%
0.375		4	0.4795	0.4365	0.5225	0.447	0.508	0.01351	0.02701	5.63%	-26.35%
0.75		4	0.202	0.1566	0.2474	0.175	0.23	0.01426	0.02851	14.11%	46.77%
1.5		4	0	0	0	0	0	0	0		100.00%
3		4	0	0	0	0	0	0	0		100.00%

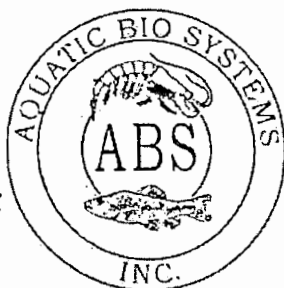
CETIS Summary Report

Report Date: 16 Aug-18 15:56 (p 2 of 2)
 Test Code/ID: RTPP080718 / 09-7647-6757

Fathead Minnow 7-d Larval Survival and Growth Test						ESC Lab Sciences
7d Survival Rate Detail						
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	D	1.0000	1.0000	1.0000	1.0000	
0.1875		1.0000	1.0000	1.0000	1.0000	
0.375		1.0000	1.0000	1.0000	1.0000	
0.75		0.4000	0.3000	0.4000	0.4000	
1.5		0.0000	0.0000	0.0000	0.0000	
3		0.0000	0.0000	0.0000	0.0000	
Mean Dry Biomass-mg Detail						
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	D	0.526	0.289	0.352	0.351	
0.1875		0.514	0.521	0.373	0.407	
0.375		0.469	0.508	0.494	0.447	
0.75		0.23	0.18	0.223	0.175	
1.5		0	0	0	0	
3		0	0	0	0	

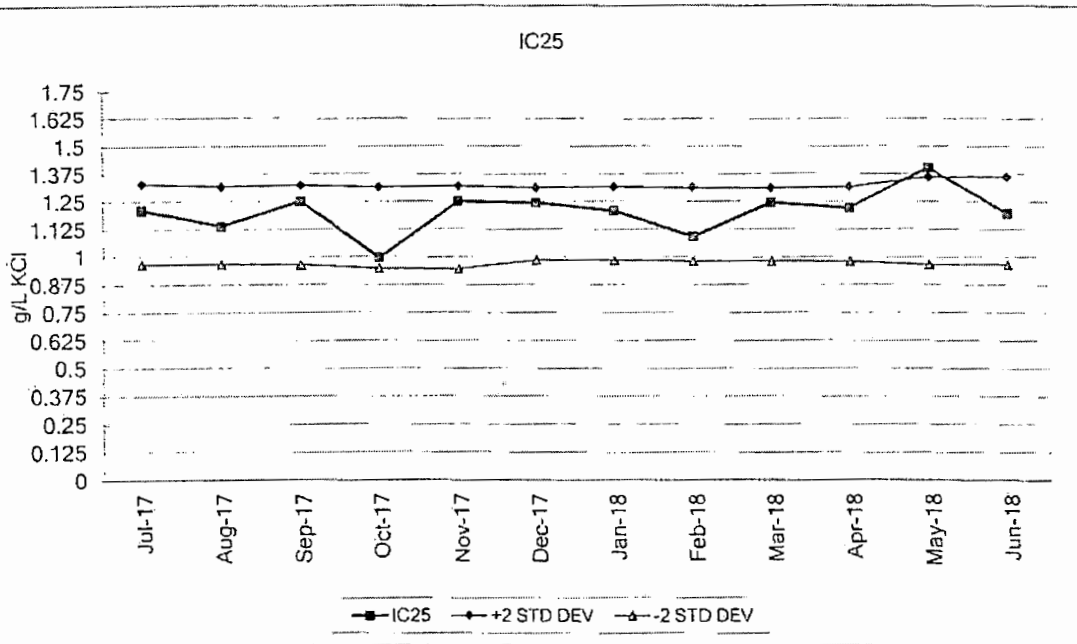
**August 2018
 Reference Toxicant Test**

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

Pimephales promelas



Chronic 7 Day Survival Test Data

Date	NOEC (g/L KCl)	LOEC (g/L KCl)
Jan-18	0.50	1.0
Feb-18	0.50	1.0
Mar-18	0.50	1.0
Apr-18	0.50	1.0
May-18	0.50	1.0
Jun-18	0.50	1.0

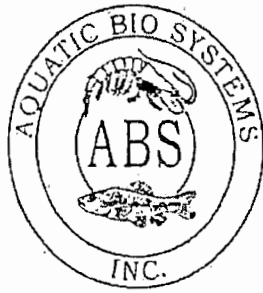
IC 25 for Growth Test

Date	IC25 (g/L KCl)	95% Confidence (upper)	95% Confidence (lower)	Avg. IC25 (g/L KCl)	+2 STD DEV	-2 STD DEV
Jan-18	1.209	1.017	1.274	1.152	1.317	0.986
Feb-18	1.092	1.169	0.963	1.146	1.312	0.981
Mar-18	1.245	1.253	0.639	1.146	1.311	0.981
Apr-18	1.222	1.267	1.086	1.148	1.316	0.980
May-18	1.403	1.487	1.114	1.163	1.360	0.967
Jun-18	1.196	1.282	0.961	1.165	1.362	0.967

**Current Test Dates: 5/30-6/6/2018

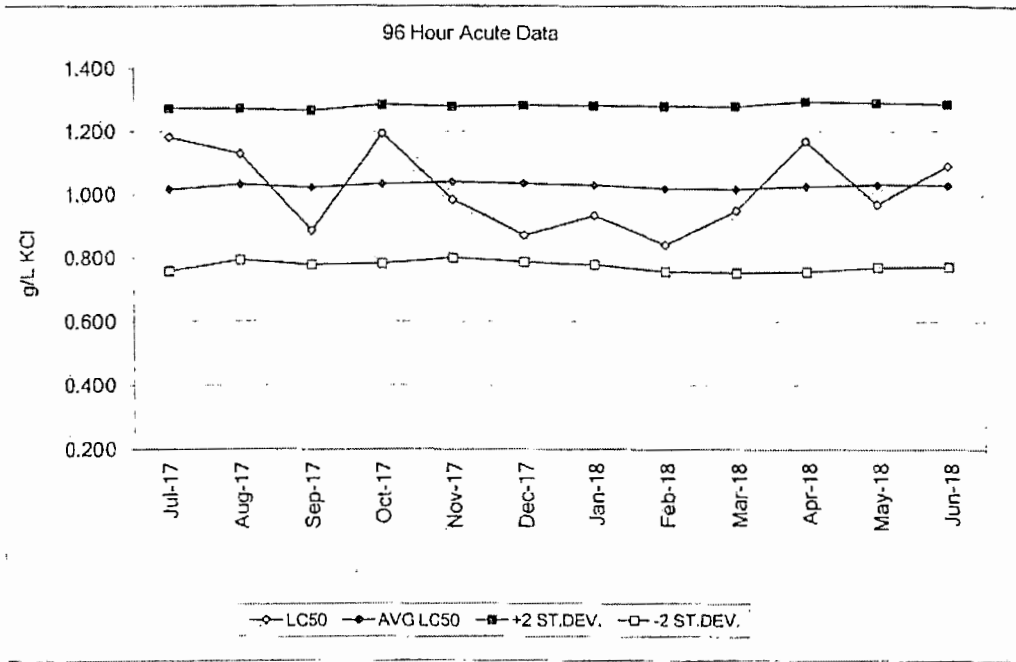
Aquatic BioSystems, Inc • Quality Research Organisms

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

REFERENCE TOXICANT LC50
Pimephales promelas



96 Hour Acute Toxicity Data For
Pimephales promelas

Date	LC50 (g/L KCl)	95% Confidence (upper) (lower)	AVG.LC50 (g/L KCl)	Method	+2 STD	-2 STD
Jan-18	0.933	1.058 0.823	1.030	SPKR	1.2813	0.7785
Feb-18	0.841	0.926 0.764	1.018	SPKR	1.2799	0.7568
Mar-18	0.949	1.079 0.835	1.016	SPKR	1.2791	0.7530
Apr-18	1.169	1.295 1.055	1.025	SPKR	1.2948	0.7558
May-18	0.969	1.106 0.849	1.031	SPKR	1.2905	0.7709
Jun-18	1.091	1.214 0.979	1.029	SPKR	1.2863	0.7714

**Current Test Dates: 5/30-6/3/2018

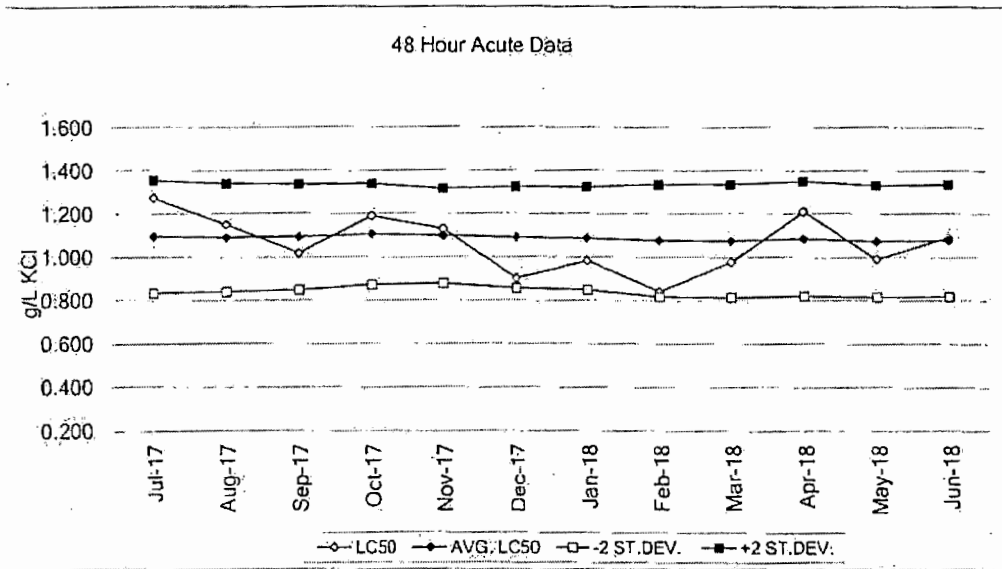
Aquatic BioSystems, Inc • Quality Research Organisms

1300 Blue Spruce Drive, Suite
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

REFERENCE TOXICANT LC50
Pimephales promelas




48 HOUR ACUTE TOXICITY DATA FOR
Pimephales promelas

DATE	LC50 (g/L KCl)	95% CONFIDENCE (upper)	(lower)	AVG.LC50 (g/L KCl)	METHOD	+2 STD	-2 STD
Jan 18	0.983	1.109	0.871	1.086	SPKR	1.3240	0.8476
Feb 18	0.841	0.926	0.764	1.077	SPKR	1.3361	0.8171
Mar 18	0.977	1.106	0.863	1.075	SPKR	1.3364	0.8145
Apr 18	1.210	1.328	1.103	1.085	SPKR	1.3502	0.8208
May 18	0.991	1.119	0.878	1.074	SPKR	1.3327	0.8151
Jun 18	1.091	1.214	0.979	1.076	SPKR	1.3346	0.8175

**Current Test Dates: 5/30-6/1/2018

Aquatic BioSystems, Inc • Quality Research Organisms

Poly Environmental Corp. Env. Lab PO Box 837 Dothan, AL 36303		Billing Information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303		Analysis / Container / Preservative										Chain of Custody Page <u>1</u> of <u>1</u>																																						
Report to: Mr. Steve Davis		Email To: sdavis@polyengineering.com; trailley@poly-inc.com		Pres Chk <u>2</u>																																																
Project Description: Headland STP Biomon		City/State Collected: <u>Headland AL</u> <u>Co 67</u>		ALKBIO 125mlHDPE-NOPres Biomonitoring 1L-HDPE-NOPres HARD 250mlHDPE-HNO3										12965 Labware No Mount Label, Ph 37122 Phone: 615-758-8858 Phone: 800-767-5819 Fax: 615-758-8859																																						
Phone: 334-793-4700 Fax: 334-677-9477		Client Project # Lab Project # POLYENV-BIO HEADLAND												L# <u>L1017169</u> F206																																						
Collected by (print): <i>Kevin Kilpatrick</i>		Site/Facility ID.# AL0027014												P.O. #		Account: POLYENV Template: T97970 Prelogin: P664056 TSB: 702 - Cassandra Foster PR: 7/26/18 MCE																																				
Collected by (signature): <i>Kevin Kilpatrick</i>		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day												Quote #		Date Results Needed																																				
Immediately Packed on Ice <input checked="" type="checkbox"/> N <input type="checkbox"/>		No of Entries		<table border="1"> <thead> <tr> <th>Sample ID</th> <th>Comp/Grab</th> <th>Matrix *</th> <th>Depth</th> <th>Date</th> <th>Time</th> <th>No of Entries</th> <th>Analysis</th> <th>Container</th> <th>Preservative</th> <th>Ship</th> <th>Remarks</th> <th>Sample # (Lab only)</th> </tr> </thead> <tbody> <tr> <td>SAMPLE 1 <u>DSH 0011</u></td> <td></td> <td><u>WW</u></td> <td></td> <td></td> <td></td> <td><u>5</u></td> <td><u>X</u></td> <td><u>X</u></td> <td><u>X</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td><u>Toxicity</u></td> <td><u>Grab</u></td> <td><u>WW</u></td> <td></td> <td><u>8/12/18</u> <u>8/13/18</u></td> <td><u>8:00</u></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><u>-01</u></td> </tr> </tbody> </table>										Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Entries	Analysis	Container	Preservative	Ship	Remarks	Sample # (Lab only)	SAMPLE 1 <u>DSH 0011</u>		<u>WW</u>				<u>5</u>	<u>X</u>	<u>X</u>	<u>X</u>				<u>Toxicity</u>	<u>Grab</u>	<u>WW</u>		<u>8/12/18</u> <u>8/13/18</u>	<u>8:00</u>							<u>-01</u>
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Entries	Analysis	Container	Preservative	Ship	Remarks	Sample # (Lab only)																																								
SAMPLE 1 <u>DSH 0011</u>		<u>WW</u>				<u>5</u>	<u>X</u>	<u>X</u>	<u>X</u>																																											
<u>Toxicity</u>	<u>Grab</u>	<u>WW</u>		<u>8/12/18</u> <u>8/13/18</u>	<u>8:00</u>							<u>-01</u>																																								
* Matrix SS - Soil AIR - Air F - Filter GW - Groundwater B - Biosay WW - Wastewater DW - Drinking Water OT - Other		Remarks: Sample #1 - Collect a 24hr composite sample from Sun-Mon (8/12-8/13). Ship sample to arrive at lab on Tuesday 8/14/2018.										pH _____ Temp _____ Flow <u>150</u> Other _____																																								
Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier		Tracking # <u>4361 6935 7510</u>		Trip Blank Received: Yes/No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No NCL/MeOH TBR										Sample received checked: <input type="checkbox"/> CCC Seal - Present/Absent: <u>Y</u> <input type="checkbox"/> CCC g/gphal/Accuracy: <u>Y</u> <input type="checkbox"/> Bottles secure inside: <u>Y</u> <input type="checkbox"/> Corrosive/Flammable used: <u>Y</u> <input type="checkbox"/> Sufficient volume sent: <u>Y</u> <input type="checkbox"/> VSA Zero-Headspace: <u>Y</u> <input type="checkbox"/> Preservation Object/Checked: <u>Y</u>																																						
Relinquished by: (Signature) <i>Kevin Kilpatrick</i>		Date: <u>8/13/18</u> Time: <u>8:44</u>		Received by: (Signature) <i>Kevin Kilpatrick</i>		Temp: <u>10.0</u> °C		Bottles frozen: <u>5</u>		If preservation required by Login, Date/Time																																										
Relinquished by: (Signature) <i>Kevin Kilpatrick</i>		Date: <u>8/13/18</u> Time: <u>08:44</u>		Received for lab by: (Signature) <i>Adam</i>		Date: <u>8/14/18</u> Time: <u>8:45</u>		Hold:		Condition: <u>NOI / OK</u>																																										

Poly Environmental Corp. Env. Lab

PO Box 837
Dothan, AL 36303

Mr. Steve Davis
P. O. Box 837
Dothan, AL 36303

Report to:
Mr. Steve Davis

Project:
Headland STP Biomon

Phone: 334-793-4700
Fax: 334-677-9477

Client Project #
POLYENV-810 HEADLAND

Site/Project ID #
AL002704

Collected by (Print):
Kevin Kippenhake

Collected by (Signature):
Kevin Kippenhake

Packed on ice: Yes No
Immediately Yes No

Rush? (Lab MUST be notified)
Same Day _____
Next Day _____
5 Day (Fed Ex) _____
10 Day (Fed Ex) _____
Three Day _____

Quote #
Date
Time

Sample ID
Matrix
Comp/Grab
Date
Time

SAMPLE 2 Effluent
WW
8/15/18
2:00 - 2:30

Remarks: Sample #2 - Collect a 24hr composite sample from Tues-Wed (8/14-8/15). Ship sample to arrive at lab on Thursday 8/16/2018.

Sample returned via:
UPS FedEx Courier
Tracking #: 4361 6435 7520

Received by: (Signature)
Date: 8/15/18
Time: 7:37

Received by: (Signature)
Date: 8/15/18
Time: 7:20

Received by: (Signature)
Date: 8/15/18
Time: 8:45

Chain of Custody / Preservative

Page 1 of 1

12005 Parkway Rd
Fayetteville, AR 72715
Phone: 479-758-5555
Phone: 800-757-5555
Fax: 479-758-5555



L1017164
H147
POLYENV
Terminal: 197971
Phone: P664058
158-702-Cassandra Foster
7/26/18 MK
Sampled Via: FedEx Ground

Matrix: WW
Date: 8/15/18
Time: 2:00 - 2:30



Remarks: Sample #2 - Collect a 24hr composite sample from Tues-Wed (8/14-8/15). Ship sample to arrive at lab on Thursday 8/16/2018.

Sample returned via:
UPS FedEx Courier
Tracking #: 4361 6435 7520

Received by: (Signature)
Date: 8/15/18
Time: 7:37

Received by: (Signature)
Date: 8/15/18
Time: 7:20

Received by: (Signature)
Date: 8/15/18
Time: 8:45

Poly Environmental Corp. Env. Lab PO Box 837 Dothan, AL 36303		Billing Information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303		Project: 2 Date:		Analysis / Container / Preservative						Chain of Custody Page 1 of 1 			
Report to: Mr. Steve Davis		Email for: sdavis@polyengineering.com tralley@poly-inc.com		Project: Headland Ala Co # 67		ALKBIO 125mHDPE-NoPres Biomonitoring 1L-HDPE-NoPres HARD 250mHDPE-HNO3						1208 Leland Ave Mount Lake, TN 37127 Phone: 615-793-5558 Mobile: 606-797-9537 Fax: 615-793-1000			
Project Description: Headland STP Biomon		Client Project #:		Lab Project #: POLYENV-BIO HEADLAND								QR Code: 		Lot #: L101769	
Phone: 334-793-4700 Fax: 334-677-9477		Site/Facility ID #: AL0027014		P.O. #:								Acctnum: POLYENV		Template: T97972	
Collected by (print): Kevin K. Kelpat		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 3 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #:								Date Results Needed:		Prelogon: P564061	
Immediately Packed on Ice: N <input type="checkbox"/> Y <input checked="" type="checkbox"/>		No. of Ltrs:		Date Results Needed:		TSN: 702 - Cassandra Foster		PB: 7/26/18							
Sample ID:		Comp/Grab:	Matrix:	Depth:	Date:	Time:	No. of Ltrs:	Shipped Via: FedEx Ground							
SAMPLE 3 DISCONT			WW				6	Remarks:							
Toxicity 314457		Grab	WW		8/16/18 8/17/18	8:30 8:30		Sample Records Checklist: CDO Seal Present/Intact: <input checked="" type="checkbox"/> Y/N CDO Signed/Rechecked: <input checked="" type="checkbox"/> Y/N Bottle(s) Airtight: <input checked="" type="checkbox"/> Y/N Correct Bottle(s) used: <input checked="" type="checkbox"/> Y/N Sufficient volume sent: <input checked="" type="checkbox"/> Y/N I.C. Analyzed: <input checked="" type="checkbox"/> Y/N VOA Zero Rechecked: <input checked="" type="checkbox"/> Y/N Analytical Method Correct: <input checked="" type="checkbox"/> Y/N							
* Matrix:		Remarks: Sample #3 - Collect a 24hr composite sample from Thurs-Fri (8/16-8/17). Ship sample to arrive at lab on Saturday 8/18/2018. **Use SATURDAY Delivery Labels**		pH: _____ Temp: _____		Flow: 160 Other: _____		Tracking #: 4492 6219 7181							
Samples returned via: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier		Tracking #:		Received by (Signature):		Trip Blank Received: Yes/No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		I.C. Preservation required by Log: Date/Time							
Relinquished by (Signature): Kevin Kelpat		Date: 8/17/18	Time: 9:37	Received by (Signature): Hunter		Temp: _____ °C		Bottles Received: 6							
Relinquished by (Signature): HTL		Date: 8/17/18	Time: 9:37	Received by (Signature): PNV		Temp: 1.0 °C		Bottles Received: 6							
Relinquished by (Signature):		Date:	Time:	Received for Job by (Signature): Furst		Date: 8/18/18		Time: 0845		Hold: _____ Location: ICE / OK					

65 of 65



12065 LEBANON RD.
 MT. JULIET, TN 37122
 (800) 767-5859
 WWW.ENVSCI.COM

December 12, 2018

Mr. Steve Davis
 Poly Environmental Corp - Headland STP
 PO Box 837
 Dothan, AL 36303

Biomonitoring Results
 Pace National Identification #: L1043601-01,-02,-03

Attached are the results for toxicity test performed: November 13-20, 2018

A summary of the findings is presented below:

Test Species	<i>Ceriodaphnia dubia</i>	<i>Pimephales promelas</i>
EPA Method	EPA Method 1002.0	EPA Method 1000.0
Test Concentrations	100%	100%
Permit Limit (IWC)	100%	100%
Test Endpoint	AEC (Pass/Fail)	AEC (Pass/Fail)
Test Result	100% (PASS)	100% (PASS)
	successfully meets permit requirements for the period	successfully meets permit requirements for the period
Next Test Date	Week of February 10, 2019	
Comments	Poly Enterprise- Headland STP AL0027014	

If you have any questions or comments concerning the enclosed report, please do not hesitate to contact us.



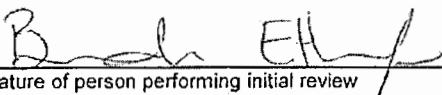
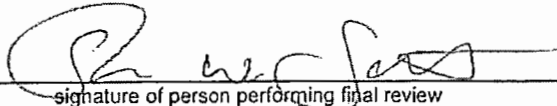
Aquatic Biology Lab
 (615) 758-5858 ext. 7549
 (615) 758-5858 ext. 7544



Acute or Chronic? Chronic
 Screen or Definitive? Screen
 Test Date: November 13-20, 2018
 Lab Identification #: L1043601-01,-02,-03

TOXICITY TEST REPORT SHEET

- | | | |
|---|---|-------------------------------|
| 1). Facility/Discharger | Poly Environmental Corp - Headland STP | |
| 2). Contact Person | Mr. Steve Davis | |
| | phone (facility) | 334.793.4700 |
| | email 1 | sdavis@polyengineering.com |
| | email 2 | emurphree@polyengineering.com |
| 3). Permit # or Project ID | AL0027014 | 4). Report Address |
| 5). Receiving Stream | | PO Box 837 |
| | | Dothan, AL 36303 |
| 6). Laboratory Name | Pace National | |
| 7). Laboratory Contact | Shain W. Schmitt, Sr. Aquatic Biologist | |
| (phone) | 615.773.9687 | |
| 8). Outfall(s) Tested | Outfall 0011 | |
| 9). Test Species | #1 <i>Ceriodaphnia dubia</i> | #2 <i>Pimephales promelas</i> |
| 10). Species Age | #1 Neonates, <24-hr | #2 24-36 hrs old |
| 11). Test Conditions
(Static or Static-Renewal?) | #1 Static-Renewal | #2 Static-Renewal |
| 12). Dilution Water Type
(synthetic, receiving stream) | Moderately Hard SDW | |
| 13). Aeration?
(Before/During Test) | none | |
| 14). Dechlorination? | none | |
| 15). Original Chlorine Level | <0.2mg/L, <0.2mg/L, * | |
| 16). Report prepared by | Amy M. Eggleston, Biologist | |

 _____ <small>signature of person performing initial review</small>	12-27-18 _____ <small>date</small>
Brandon Etheridge _____ <small>name (typed or printed)</small>	Sr. Biologist _____ <small>title</small>
 _____ <small>signature of person performing final review</small>	12-27-18 _____ <small>date</small>
Shain W. Schmitt _____ <small>name (typed or printed)</small>	Sr. Aquatic Biologist _____ <small>title</small>

SAMPLING SUMMARY

Sample	Sample Type Grab or Composite	Volume Collected	Sample Collection		Flow Rate (at collection)	Sample Temperature (when received at lab)
			Begin (MM/DD/Time)	End (MM/DD/Time)		
1	Composite	3 Liters	11/11/2018 @ 8:00	11/12/2018 @ 8:00	0.250 MGD	0.5 deg C
2	Composite	3 Liters	11/13/2018 @ 9:00	11/14/2018 @ 9:00	0.425 MGD	0.2 deg C
3	Composite	4 Liters	11/15/2018 @ 8:00	11/16/2018 @ 8:00	0.475 MGD	2.2 deg C

Comments:

TEST PERFORMANCE

Species #1

Ceriodaphnia dubia (water flea)
11/13/2018 @ 15:55 to 11/19/2018 @ 16:10

Species Age

< 24 hrs old, within 8 hrs of the same age

Organism Source

Pace National, in-house cultures

Acclimation Procedure

cultured in Moderately Hard SDW at 25 deg C

Test Duration

3-Brood

Feeding Regime

0.15 mL YCT and 0.15 mL algal suspension, daily, upon renewal

Type of Test Chamber

polystyrene cup

Volume of Test Chamber

30 mL

Volume of Solution Used Per Test Chamber

20 mL

Number of Test Organisms Per Test Chamber

one (1)

Number of Replicates Per Treatment

ten (10)

Species #2

Pimephales promelas (fathead minnow)
11/13/2018 @ 15:55 to 11/20/2018 @ 11:21

Species Age	Hatch Date	Pace National Lot #
24-36 hrs old	11/12/2018	111218HD

Organism Source

Aquatic Bio Systems - Fort Collins, CO

Acclimation Procedure

acclimated in 20% DMW at 25 deg C for about 2 hrs

Test Duration

7-Day

Feeding Regime

0.15 mL - 0.2 mL newly hatched brine shrimp nauplii, twice daily

Type of Test Chamber

polypropylene beaker

Volume of Test Chamber

500 mL

Volume of Solution Used Per Test Chamber

250 mL

Number of Test Organisms Per Test Chamber

ten (10)

Number of Replicates Per Treatment

four (4)



ADDITIONAL TOXICITY TEST INFORMATION

Copies of all bench sheets and statistical calculations and printouts obtained during the test are attached in the Appendix.

Methods/Instrumentation used in chemical analysis:

Dissolved Oxygen: YSI 5000 DO Meter/Probe (serial #01L0435)

pH: Beckman 390pH/Temp/mV/ISE Meter

pH/RDO/Conductivity: Thermo Scientific Orion VersaStar (serial #V 02105)

Water Bath: Lindberg/Blue, Model WB1140A-1 (serial #S01M-580360-SM)

Temperature: Thermometers calibrated to NIST certified thermometer

Alkalinity: Lachat

Hardness: Lachat

Total Residual Chlorine: Hach Pocket Colorimeter, Model #46770-00 (serial #971000112186)

Environmental Chambers: 25 degrees C + 1.0 degree - Thermo-Kool

Environmental Chambers (for Colorado tests): 20 degrees C \pm 1.0 degree - Thermo Scientific Model 3759

Light Quality: Ambient Lab Illumination

Light Intensity: 50-100 ft-c - VWR Traceable Dual-Range Light Meter- Model 62344-944 (S/N 181399747)

Photoperiod: 16 hours light, 8 hours dark

Drying: Overnight at greater than 60 degrees Celsius in a Fisher Scientific Isotemp Oven, Model 655F

Mean Dry Weight: Determined using Mettler Toledo Balance, AT261 Delta Range

Reference Weights (Set #1): Class 1, TREOMNER, Inc., serial number 85035

Reference Weights (Set #2): Class 1, TREOMNER, Inc., serial number 67812

EPA Acute Manual Edition and Date: EPA-821-02-012 October 2002, Fifth Edition

EPA Chronic Manual Edition and Date: EPA-821-R-02-013 October 2002, Fourth Edition

This method is performed only by Assistant Biologists, Biologists, and Senior Biologists that have experience with aquatic toxicity testing. Laboratory Technicians, Chemists, and any other laboratory personnel that are not experienced with toxicity testing will not handle test organisms during a toxicity evaluation. Lab Techs, Chemists, and others may assist (under supervision) with the gathering of data during the evaluation (pH, DO, conductivity, alkalinity, hardness, etc.), but will not be allowed to do any work with the test organisms themselves. The following analysts have met Technical Training Qualifications and their initials (in parenthesis) can be found on the bench sheets in this report: **Brandon Etheridge (BE); Shain W. Schmitt (SWS); Adam Macomber (AM); Amy Eggleston (AME); Brittne Boyd (BB); Melissa Holwerda (MH); Cody Medley (CM); Kristen Rodgers (KR); Clarissa Moore (CGM); Nadiar Yakob (NY); Jon Berry (JB); Matthew Lockhart (MIL)**

Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from EPA Methodology that were necessary for these tests as well as any sample manipulations which were performed, such as aeration, dechlorination with sodium thiosulfate (etc) and the justification for such manipulations or deviations. Attach additional pages as needed.

*Sample #3 Cl2 reading missed due to lab error.



Toxicity Test Results

Results of a Ceriodaphnia (*Genus*) dubia (*Species*) 3-Brood, Survival & Reproduction Test (*Type/Duration*)

Conducted 11/13/2018 to 11/19/2018 Using Effluent from Outfall: Outfall 0011

Test Solution	Percent Surviving (time intervals used - days)							# of Young		
	0	1	2	3	4	5	6	7	Total	Mean
Control	100	100	100	100	100	100	100		296	29.6
100% Effluent	100	100	100	100	100	100	100		327	32.7

Permit Limit: (IWC) 100% NOEC Value: (AEC) 100% survival 100% reproduction

Coefficient of Variance (CV%): 22.4%

Confidence Limits

Upper Limit: Upper Limit

Lower Limit: Lower Limit

Statistical methods used to determine NOEC (if applicable):

Fisher Exact Test, Dunnett's Test, Wilcoxon Rank Sum Two-Sample Test, Variance Ratio F Test, Shapiro-Wilk W Normality Test

Percent Minimum Significant Difference: 19.9%

$$PMSD = \frac{\text{Minimum Significant Difference} \times 100}{\text{Control Mean (reproduction)}}$$

The PMSD describes the variability that occurred within the test. If the PMSD value for a given test is less than or equal to the 90th PMSD (47 for *Ceriodaphnia*), the test's variability measure is within the normal range expected for the test.

INTERPRETATION OF RESULTS

Ceriodaphnia dubia (water flea) - No toxicity was demonstrated. Using Fisher Exact Test, Dunnett's Test, Wilcoxon Rank Sum Two-Sample Test, Variance Ratio F Test, and Shapiro-Wilk W Normality Test, it was determined that the AEC (Adverse Effect Concentration) for survival and reproduction is equal to 100% effluent. There was no statistically significant difference between the effluent concentration and the Control. Permittee successfully meets permit requirements for the period (PASS test).



Toxicity Test Results

Results of a Pimephales (*Genus*) promelas (*Species*) 7-day, Survival & Growth Test (*Type/Duration*)

Conducted 11/13/2018 to 11/20/2018 Using Effluent from Outfall: Outfall 0011

Test Solution	Percent Surviving (time intervals used - days)								Dry Weight (mg)	
	0	1	2	3	4	5	6	7	Total	Mean
Control	100	97.5	97.5	97.5	97.5	97.5	97.5	97.5	1.3880	0.3470
100% Effluent	100	100	100	100	100	100	100	100	1.2660	0.3165

Permit Limit: (IWC) 100%

NOEC Value: (AEC) 100% survival 100% growth

Coefficient of Variance (CV%): 12.4%

Confidence Limits
Upper Limit:
Lower Limit:

Percent Minimum Significant Difference: 14.5%

Statistical methods used to determine NOEC (if applicable):

Wilcoxon Rank Sum Two-Sample Test, Equal Variance t Two-Sample Test, Dunnett's Test, Levene Equality of Variance Test, Mod Levene Equality of Variance Test, Shapiro-Wilk W Normality Test, Variance Ratio F Test

$$PMSD = \frac{\text{Minimum Significant Difference} \times 100}{\text{Control Mean (growth)}}$$

The PMSD describes the variability that occurred within the test. If the PMSD value for a given test is less than or equal to the 90th PMSD (30 for fathead minnow), the test's variability measure is within the normal range expected for the test.

INTERPRETATION OF RESULTS

Pimephales promelas (fathead minnow) - No toxicity was demonstrated. Using Wilcoxon Rank Sum Two-Sample Test, Equal Variance t Two-Sample Test, Dunnett's Test, Levene Equality of Variance Test, Mod Levene Equality of Variance Test, Shapiro-Wilk W Normality Test, and Variance Ratio F Test, it was determined that the AEC (Adverse Effect Concentration) for survival and growth is equal to 100% effluent. There was no statistically significant difference between the effluent concentration and the Control. Permittee successfully meets permit requirements for the period (PASS test).



Facility/Discharger: Poly Environmental Corp - Headland STP

Lab Identification #: L1043601-01,-02,-03

Test Date: November 13-20, 2018

APPENDIX

4. SAMPLE COLLECTION:

Split samples: N/A Yes _____ (explain) _____
 Samples Collected as Specified in the NPDES Permit: Yes No (explain) _____

Receiving Water: _____ Design Flow: _____ (MGD)

Sample ID	Sample(s) Collected				Arrival Temp (°C)	Used in Test(s)	
	MM/DD/YY	HH:MM	- MM/DD/YY	HH:MM		MM/DD/YY	- MM/DD/YY
L1043601-01	11/11/2018	8:00	11/12/2018	8:00	0.5	11/13/2018	11/14/2018
L1043601-02	11/13/2018	9:00	11/14/2018	9:00	0.2	11/15/2018	11/16/2018
L1043601-03	11/15/2018	8:00	11/16/2018	8:00	2.2	11/17/2018	11/20/2018

5. CONTROL / DILUTION WATER:

Type	Prepared MM/DD/YY	Begin Use MM/DD/YY	Initial Water Chemistries				
			Hardness	Alkalinity	pH	Spec. Con.	@ °C
MHSDW	S 11-12	11/13/2018	57	53	8.0	262	25
MHSDW	A 11-14	11/15/2018	57	51	8.1	253	25
MHSDW	E 11-15	11/16/2018	57	50	8.2	260	25
MHSDW	S 11-14	11/15/2018	51	51	8.1	231	25
MHSDW	S 11-17	11/18/2018	60	43	8.1	265	25
MHSDW	S 11-18	11/19/2018	58	59	8.1	261	25

*Reading missed due to conductivity meter not working properly. *Alk/Hard not submitted for analysis due to analyst error.

6. TOXICITY TEST INFORMATION:

Test Species	Organism Age	Organism Source	Test Solution Concentrations (%)					
<i>Ceriodaphnia dubia</i>	< 24 hours old	in-house cultures	Control	100				
<i>Pimephales promelas</i>	< 36 hours old	Aquatic Bio Systems, Inc.	Control	100				

Test Species	Test Vessel Type	Vessel Volume (mL)	Solution Volume (mL)	Org. / Test Vessel	Replicates per Conc.
<i>Ceriodaphnia dubia</i>	polystyrene cups	30 mL	20 mL	1	10
<i>Pimephales promelas</i>	polypropylene cups	500 mL	250 mL	10	4

Test Species	Temperature Range	D.O. Range (mg/L)	pH Range (mg/L)	Light Intensity Average (ft-c)
<i>Ceriodaphnia dubia</i>	24.0 - 26.0	8.2 - 9.1	7.2 - 7.9	74.3
<i>Pimephales promelas</i>	24.0 - 25.9	8.2 - 9.1	7.2 - 7.9	74.3

7. FEEDING:

Not Fed: _____ Fed Daily: Fed Irregular: _____ (explain in comments below)

Brine Shrimp: Fed 0.15 - 0.2 mL suspension of newly hatched larvae 2 times daily.
 YCT: Fed 0.15 mL suspension containing 1720 mg/L TSS daily.
 Algae: Fed 0.15 mL suspension containing 3.0 X 10⁷ algal cells/mL daily.

COMMENTS:

8. REFERENCE TOXICANT TESTS:

Toxicant: potassium chloride (KCl) Source: VWR International LLC VWR Lot#: 18G0956180
 ESC Lot #: 39017

Solution concentration unit: _____ mg/L X _____ g/L _____ % _____ Other (specify)

Test Organism	Test Date MM/DD - MM/DD	Control Water	Reference Test Solution Concentrations (control to highest concentration)						
			Control	0.05	0.1	0.2	0.4		0.8
<i>Ceriodaphnia dubia</i>	11/6 - 11/13	Moderately Hard SDW	Control	0.05	0.1	0.2	0.4	0.8	
<i>Pimephales promelas</i>	11/6 - 11/13	Moderately Hard SDW	Control	0.1875	0.375	0.75	1.5	3.0	

Test Organism	Results IC25	95% Confidence Interval	Upper and Lower CUSUM Chart Control Limit (this test)	Number (N)
<i>Ceriodaphnia dubia</i>	0.3355	0.2515 - 0.4401		
<i>Pimephales promelas</i>	0.4976	0.3863 - 0.6047		

9. TEST CONDITION VARIABILITY:

9.A. Deviations from standard test conditions:

<< no manipulations or modifications to report >>

9.B. Test solution manipulations or test modifications:

<< no manipulations or modifications to report >>

10. REQUIRED REPORT ATTACHMENTS:

Attach copies of Chain-of-Custody Forms, Reference Toxicant Tests, and Raw Data (bench sheets) pertaining to physical, chemical, and biological measurements for all tests. Include suspended, interrupted, or discontinued toxicity test data.

COMMENTS:

11.A. ACUTE SCREENING TOXICITY TEST RESULTS (freshwater):

TEST ORGANISM: _____

ACUTE TOXICITY INDICATED: _____ YES _____ NO

NO ACUTE STATISTICAL ANALYSIS NECESSARY: _____

SOLUTION CONC (%)	CONTROL				
MORTALITY (%)					

not

PERMITTED MORTALITY RATE (%): _____

Normally Distributed: YES _____ NO _____

Test Statistic: _____ Critical Value: _____ (Parametric)

Equal Variance: _____ Unequal Variance: _____

F Statistic: _____ Critical F: _____

t-Test Statistic: _____ t-Test Critical Value: _____

Sample Rank Sum: _____ # Reps: _____ Critical Rank Sum: _____ (Non-Parametric)

COMMENTS:

applicable

TEST ORGANISM: _____

ACUTE TOXICITY INDICATED: _____ YES _____ NO

NO ACUTE STATISTICAL ANALYSIS NECESSARY: _____

SOLUTION CONC (%)	CONTROL				
MORTALITY (%)					

not

PERMITTED MORTALITY RATE (%): _____

Normally Distributed: YES _____ NO _____

Test Statistic: _____ Critical Value: _____ (Parametric)

Equal Variance: _____ Unequal Variance: _____

F Statistic: _____ Critical F: _____

t-Test Statistic: _____ t-Test Critical Value: _____

Sample Rank Sum: _____ # Reps: _____ Critical Rank Sum: _____ (Non-Parametric)

COMMENTS:

applicable

11.C. CHRONIC SCREENING TOXICITY TEST RESULTS (freshwater):

TEST ORGANISM: Ceriodaphnia dubia

Were neonates used to begin the test within 8 hours of the same age? yes

Did 60% of the CONTROL females produce their third brood? yes

SURVIVAL

CHRONIC TOXICITY INDICATED: YES _____ NO X

NO SURVIVAL STATISTICAL ANALYSIS NECESSARY: _____

CONTROL (%)	24 h <u>100%</u>	48 h <u>100%</u>	END <u>100%</u>	EFFLUENT (%)	24 h <u>100%</u>	48 h <u>100%</u>	END <u>100%</u>
Fisher's Exact Test:	A = _____	B = _____	a = _____	b = _____			

REPRODUCTION (Average Neonates/Female)

CHRONIC TOXICITY INDICATED: YES _____ NO X

CONTROL: 29.6 EFFLUENT: 32.7

NO REPRODUCTION STATISTICAL ANALYSIS NECESSARY: _____

Normally Distributed:	YES _____	NO <u>X</u>	
Test Statistic:	<u>0.7361</u>	Critical Value:	<u>0.866</u> (Parametric)
Equal Variance:	<u>X</u>	Unequal Variance:	_____
F Statistic:	<u>1.615</u>	Critical F:	<u>6.541</u>
t-Test Statistic:	<u>130.5</u>	t-Test Critical Value:	<u>n/a</u>
Sample Rank Sum:	_____	# Reps:	<u>10</u> Critical Rank Sum: _____ (Non-Parametric)

COMMENTS: **PASS test (AEC = 100%)**

TEST ORGANISM: Pimephales promelas

SURVIVAL

CHRONIC TOXICITY INDICATED: YES _____ NO X

NO SURVIVAL STATISTICAL ANALYSIS NECESSARY: _____

CONTROL (%)	24 h <u>97.5%</u>	48 h <u>97.5%</u>	END <u>97.5%</u>	EFFLUENT (%)	24 h <u>100%</u>	48 h <u>100%</u>	END <u>100%</u>
Normally Distributed:	YES _____	NO <u>X</u>					
Test Statistic:	<u>0.7065</u>	Critical Value:	<u>0.6451</u> (Parametric)				
Equal Variance:	<u>X</u>	Unequal Variance:	_____				
F Statistic:	<u>1</u>	Critical F:	<u>13.75</u>				
t-Test Statistic:	_____	t-Test Critical Value:	_____				
Sample Rank Sum:	<u>20</u>	# Reps:	<u>4</u> Critical Rank Sum: <u>n/a</u> (Non-Parametric)				

GROWTH (Mean Dry Weight - mg)

CHRONIC TOXICITY INDICATED: YES _____ NO X

CONTROL: 0.347 EFFLUENT: 0.3165

NO GROWTH STATISTICAL ANALYSIS NECESSARY: _____

Normally Distributed:	YES <u>X</u>	NO _____	
Test Statistic:	<u>0.9036</u>	Critical Value:	<u>0.6451</u> (Parametric)
Equal Variance:	<u>X</u>	Unequal Variance:	_____
F Statistic:	<u>2.242</u>	Critical F:	<u>47.47</u>
t-Test Statistic:	<u>1.175</u>	t-Test Critical Value:	<u>1.943</u>
Sample Rank Sum:	_____	# Reps:	<u>4</u> Critical Rank Sum: _____ (Non-Parametric)

COMMENTS: **PASS test (AEC = 100%)**

Poly Env. - Headland STP

NPDES #: AL0027014

Test Date: November 13-20, 2011

Login #: L1043601-01-02-03

Tue 11/13/18

Initials	pH	Con.	DO	Time	Analyst
Control	*	*	*	*	
Dup. Control	*	*	*	*	0
100	*	*	*	*	
Dup. 100	*	*	*	*	0

Comments:

Control #13 All data is entered in real time, data sheets are electronically tracked, and password protected.

* Readings missed. Analyst error- CGM 11-20-18

Wed 11/14/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.3	262.4	9.1	12:17:09	BB
100	7.2	135.8	9.1	12:28:47	BB

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	7.9	8.3	15:49:23	BB	7.8	8.3	10:24:58	BB
Dup. Control	7.9	9.1	15:49:42	BB	7.9	8.2	10:25:23	BB
100	7.8	9.1	15:50:11	BB	7.7	8.2	10:26:02	BB
Dup. 100	7.8	9.2	15:50:30	BB	7.6	8.2	10:26:23	BB

Thu 11/15/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.3	274.7	8.8	15:27:15	MIL
100	7.4	213.2	9	15:27:51	MIL

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	8	8.7	17:10:06	MIL	7.8	8.9	10:39:59	BB
100	7.8	8.9	17:10:47	MIL	7.6	8.9	10:41:01	BB

Fri 11/16/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.9	*	8.3	10:48:50	CM
100	7.9	*	8.2	10:49:40	CM

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	8	8.8	15:01:13	BB	8	8.8	17:03:13	BB
100	8	8.9	15:01:49	BB	7.8	8.8	17:03:41	BB

* Readings missed. Analyst error. BE 11/23/18

Sat 11/17/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.9	241.5	8.4	14:54:53	MIL
100	7.4	160.9	8.6	14:55:30	MIL

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	8	8.7	15:25:28	MIL	7.9	8.6	9:49:50	MIL
100	8.1	8.6	15:26:12	MIL	7.9	8.5	9:50:12	MIL

Sun 11/18/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.9	264.5	8.5	13:26:07	JB
100	7.5	220.9	9	13:26:55	JB

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	7.9	8.9	14:24:13	MIL	7.8	7.9	9:48:04	MIL
100	7.9	8.8	14:24:48	MIL	7.8	8	9:48:34	MIL

Mon 11/19/18

Initials	pH	Con.	DO	Time	Analyst
Control	7.9	255.5	8.4	13:16:57	JB
100	7.2	130.3	8.8	13:19:03	JB

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	8	8.7	17:20:43	JB	7.7	7.7	10:45:13	JB
100	7.9	8.5	17:21:49	JB	7.7	7.7	10:45:57	JB

Tue 11/20/18

Initials	pH	Con.	DO	Time	Analyst
Control	/	/	/	/	/
100	/	/	/	/	/

Ceriodaphnia dubia

Pimephales promelas

Initials	pH	DO	Time	Analyst	pH	DO	Time	Analyst
Control	/	/	/	/	7.8	7.8	10:03:19	MIL
100	/	/	/	/	7.6	7.8	10:03:56	MIL

Initials	pH		Con		DO	
	range	mean	range	mean	range	mean
Control	7.3-7.9	7.8	241.5-274.7	260	8.3-9.1	8.6
100	7.2-7.9	7.4	130.3-220.9	172	8.2-9.1	8.8

Initials	<i>Ceriodaphnia dubia</i>				<i>Pimephales promelas</i>			
	pH		DO		pH		DO	
	range	mean	range	mean	range	mean	range	mean
Control	7.9-8	8.0	8.7-9.1	8.9	7.7-8	7.8	7.7-8.9	8.3
100	7.8-8.1	7.9	8.5-9.2	8.9	7.6-7.9	7.7	7.7-8.9	8.1

Poly Env. - Headland STP

NPDES #: AL0027014

Test Date: November 13-20, 2018

ESC Lab #: L1043601 -01,-02,-03

Thermometer Serial #: 18050064

Record of Daily Temperatures (°C)

***Pimephales promelas* (fathead minnow)** - measurement taken in test chambers

	Tue 11/13/18	Wed 11/14/18	Thu 11/15/18	Fri 11/16/18	Sat 11/17/18	Sun 11/18/18	Mon 11/19/18	Tue 11/20/18
Analyst: (initial)	NY	JB	NY	AME	MIL	JB	NY	
Temp of Sample Container	25.4°C	25.9°C	24.5°C	26.0°C	24.9°C	24.3°C	24.2°C	
Control (initial)	25.5°C	24.3°C	24.9°C	24.9°C	25.0°C	24.7°C	24.2°C	
100	25.6°C	24.9°C	24.6°C	25.9°C	24.0°C	24.1°C	24.3°C	
	(final)	(final)	(final)	(final)	(final)	(final)	(final)	(final)
Analyst:	NY	NY	CM	MH	NY	NY	NY	
Control	24.3°C	24.5°C	24.0°C	24.0°C	24.3°C	24.6°C	24.5°C	
100	24.6°C	24.6°C	24.0°C	24.0°C	24.2°C	24.5°C	24.6°C	

***Ceriodaphnia dubia* (water flea)** - measurement taken in surragote cup located on each tray

	Tue 11/13/18	Wed 11/14/18	Thu 11/15/18	Fri 11/16/18	Sat 11/17/18	Sun 11/18/18	Mon 11/19/18	Tue 11/20/18
Analyst: (initial)	NY	JB	NY	AME	MH	JB		
Temp of Sample Container	25.4°C	25.9°C	24.5°C	26.0°C	24.9°C	24.3°C		
Control (initial)	25.4°C	24.8°C	24.9°C	24.7°C	25.9°C	24.8°C		
100	25.4°C	25.1°C	24.5°C	26.0°C	24.9°C	24.2°C		
	(final)	(final)	(final)	(final)	(final)	(final)	(final)	(final)
Analyst:	NY	NY	CM	MH	NY	NY		
Control	24.6°C	24.3°C	24.0°C	24.3°C	24.3°C	24.2°C		
100	24.5°C	24.4°C	24.0°C	24.3°C	24.2°C	24.3°C		

Poly Env. - Headland STP

Poly Env. - Headland STP

NPDES # AL0027014 Test Dates: November 13-20, 2018 L#: L1043601 -01,-02,-03-
 Control #13

L# of Control		Alkalinity (mg/L)	Hardness (mg/L)	
L1043905-05	Tue 11/13/18	53	57	S 11-12
L1044831-04	Thu 11/15/18	51	57	A 11-14
L1044831-05	Sat 11/17/18	51	51	S 11-14

Alkalinity (mg/L)	
range: 51-53	mean: 51.7
Hardness (mg/L)	
range: 51-57	mean: 55.0

100% Effluent	Alkalinity (mg/L)	Hardness (mg/L)
Tue 11/13/18	42	35
Thu 11/15/18	47	62
Sat 11/17/18	52	59

Alkalinity (mg/L)	
range: 42-52	mean: 47.0
Hardness (mg/L)	
range: 35-62	mean: 52.0

	Total Res. Cl ₂ (mg/L)	Analyst
Tue 11/13/18	<0.2	BE
Thu 11/15/18	<0.2	JB
Sat 11/17/18	*	*

Record of Daily *Pimephales promelas* (fathead minnow) Feedings

Minnows in chronic WET tests are fed 0.15 - 0.2 mL (per test vessel) newly hatched brine shrimp nauplii, twice daily (morning & afternoon). At test initiation, minnows are fed only once (in the afternoon). On the final day of the test, minnows are not fed.

Morning Feedings

	Tue 11/13/18	Wed 11/14/18	Thu 11/15/18	Fri 11/16/18	Sat 11/17/18	Sun 11/18/18	Mon 11/19/18	Tue 11/20/18
Time:	test initiation	7:35	7:35	7:30	7:10	7:30	7:55	test ends
Analyst:	not applicable	KR	KR	CM	MH	NY	NY	not fed

Afternoon Feedings

	Tue 11/13/18	Wed 11/14/18	Thu 11/15/18	Fri 11/16/18	Sat 11/17/18	Sun 11/18/18	Mon 11/19/18	Tue 11/20/18
Time:	7:40	16:20	16:00	15:13	14:45	14:00	16:45	test ends
Analyst:	KR	JB	CM	MIL	BB	NY	NY	not fed

Light Intensity (ft-c) of Test Incubator

	Tue 11/13/18	Wed 11/14/18	Thu 11/15/18	Fri 11/16/18	Sat 11/17/18	Sun 11/18/18	Mon 11/19/18	Tue 11/20/18
Top	78.8	75	74.8	73.5	74.5	78.2	78.8	79.5
Middle	77.6	70.3	73.9	70.7	69.8	77.5	78.1	78.8
Bottom	76.8	65.8	70.2	68	65.5	74.6	75.9	75.6
Average	77.7333333	70.366667	72.966667	70.73333	69.93333	76.766667	77.6	77.966667

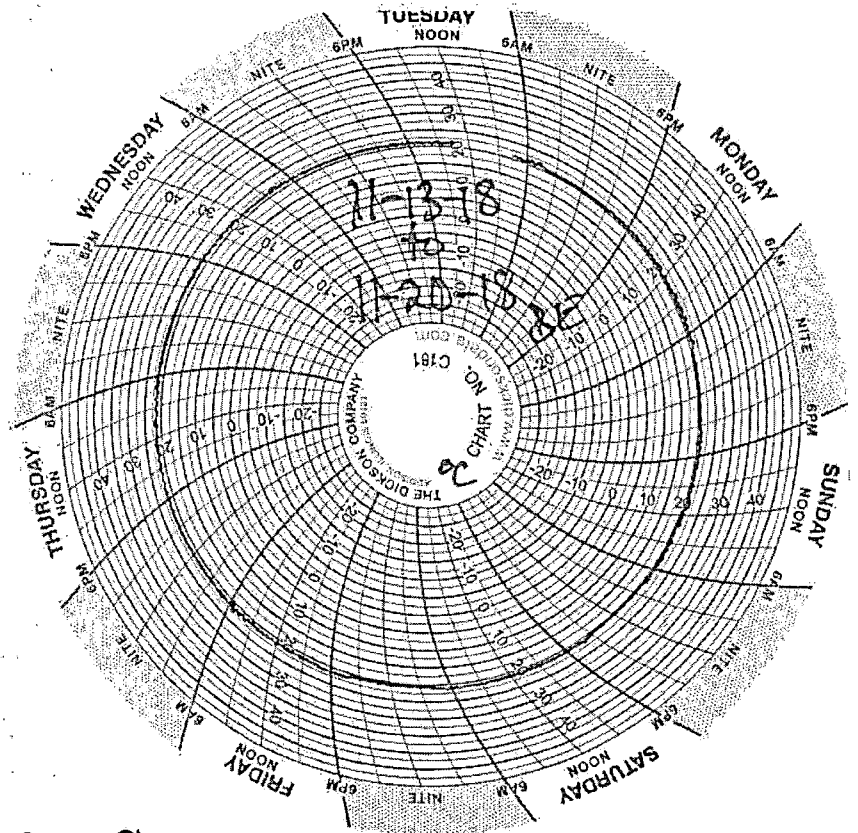
Light Intensity (ft-c) - average of all days in test period 74.25833333

Poly Env. - Headland STP

Chart Devices Used in Thermo-Kool Walk-in Incubator:

Dickson (small chart)

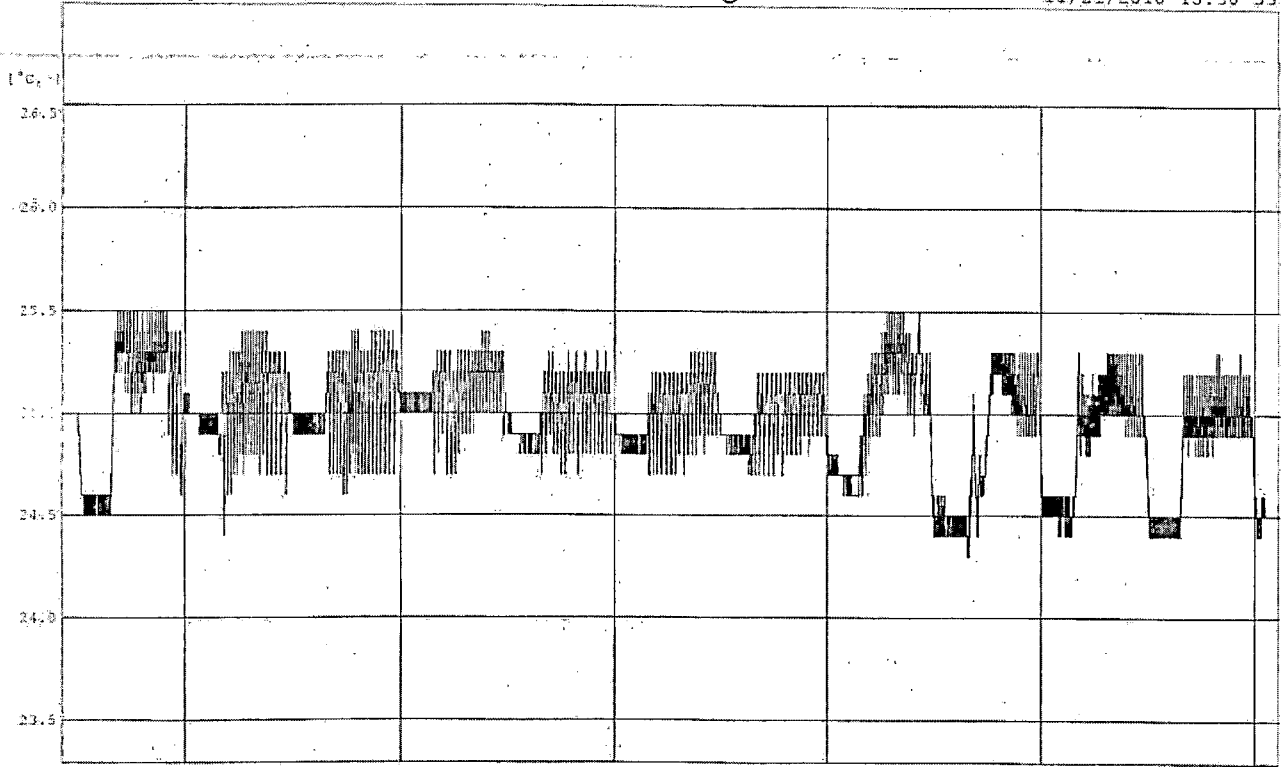
~~Honeywell (large chart)~~



Week of 11-13-18 to 11-20-18 BE

Thermo Graph for Windows

11/21/2018 15:30'55



ch.	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Dnit
1	Ch1	2min.	8000	----	----	----	25.5	24.3	25.0	°C
2	Ch2	2min.	8000	----	----	----	25.5	24.3	25.0	°C

Cur.A Date : 11/08/2018 20:20'52
 Cur.B Date : 11/20/2018 5:23'09
 Data Range 11/08/2018 20:20'52-11/20/2018 5:23'09
 diff. A-B : 11 09:02'17.000
 Calc.Range 11/08/2018 23:32'50-11/20/2018 2:11'11

NOTATIONS USED BY ANALYSTS DURING TOXICITY EVALUATIONS

Ceriodaphnia dubia (water flea)

- # numbers on the Reproduction bench sheets (chronic) indicate the number of live young produced
- @ if number is circled, this indicates movement of daphnid has become impaired either by actual algal growth on the organisms, or has become entrapped in substances found in the effluent sample, or has been covered in stalked cilia
- ME (molted embryo) often a stressed or poor condition female will abort all or some of a brood in response to a toxin, insufficient nutrition, or just an inability to sustain a certain level of reproduction
- P (pale) this is a noticeable reduction in coloration compared to that which is normal for the individual's age
- SS (small size) this observation is made in comparison to other individuals of the same brood or age group and generally represents a difference of at least 2X size difference
- ES (erratic swimming) this represents a locomotor behavior typified by unsustained swimming with the daphnid periodically "resting" on the bottom of the test vessel; this condition is often observed prior to a daphnid becoming totally immotile
- I (immotility) this denotes a total lack of motility; daphnid is on the bottom of the test vessel and is confirmed as living; daphnids are frequently dead within a short time
- LIT (lost in transfer) organism was lost during transfer process; stats are adjusted to represent this dilution as having one less organism
- NL (not loaded) organism was not loaded at test initiation; stats are adjusted to represent this dilution having one less organism
- NT (not transferred) organism was not present at the time of the next transfer; stats are adjusted to represent this dilution having one less organism loaded at the initiation of testing
- X (dead) dead daphnid is on bottom of test vessel and is confirmed dead by observation of no appendage movement and no visible heartbeat

Pimephales promelas (fathead minnow)

- # numbers indicate the number of live organisms remaining
- BS (bent spine) fish appear to have a curved spine
- LR (loss of reflex) fish are alive, but slow to react to gentle prodding
- NL (not loaded) organism was not loaded at test initiation; stats are adjusted to represent this dilution having one less organism
- TS (top swimmers) fish appear to congregate only at the surface of the test solution (sometimes attributed to low dissolved oxygen levels)
- SS (small size) this observation is made in comparison to other individuals of the same age group and generally represents a difference of at least 2X size difference

Date(s) and Time(s) of Neonate Harvest: From 17:00 on 11/12/2018 to 23:30 on 11/12/2018

Neonates were Harvested from the Following Tray(s):	111218XA1	111218XA1	111218XA1	110618AD	110618AD	110618AD	110618AD	110618AD	110618AD	110618AD	110618AD	Template Name:	
Neonates were Harvested from the Following Cups:	I4	J2	J5	A7	B1	B3	B5	C1	C6	F3	ETA		

Control Water Carboy Used

Description of Sample Being Analyzed Below: CONTROL 13 Poly Env. - Headland STP															AL0027014		
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time	Analyst		A: 1	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0				
S 11-12	Tue 11/13/18	15:55	NY	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
S 11-12	Wed 11/14/18	11:25	KR	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
A 11-14	Thu 11/15/18	14:15	KR	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
E 11-15	Fri 11/16/18	11:47	AME	72 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
S 11-14	Sat 11/17/18	13:22	MH	96 hrs	6	4	5	5	6	5	4	6	4	4	49	10	
S 11-17	Sun 11/18/18	12:19	NY	120 hrs	8	15	12	14	15	14	13	13	12	8	124	10	
	Mon 11/19/18	16:10	CM	144 hrs	0	16	14	15	13	14	14	14	13	10	123	10	
	Tue 11/20/18			168 hrs											0		
	Wed 11/21/18			192 hrs											0		
Total # of Young Produced:					14	35	31	34	34	33	31	33	29	22	Total Offspring at Renewal	Total Young Produced	
C. dubia Cup Batch/Lot: 5000Q41496																296	296

Test Acceptability Criteria:	Survival ≥ 80%?	≥ 15 neonates/female?		≥ 60% 3rd brood?		Control Valid?	
	YES NO	YES NO	YES NO	YES NO	YES NO		
	X	X	X	X			

Description of Sample Being Analyzed Below: 100 Poly Env. - Headland STP															AL0027014		
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time	Analyst		A: 3	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0				
	Tue 11/13/18	15:55	NY	initiation	0	0	0	0	0	0	0	0	0	0	0	10	
	Wed 11/14/18	11:27	KR	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10	
	Thu 11/15/18	14:17	KR	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10	
	Fri 11/16/18	11:49	AME	72 hrs	0	0	0	0	0	0	0	0	0	0	0	10	
	Sat 11/17/18	13:27	MH	96 hrs	5	4	6	6	4	5	3	7	6	5	51	10	
	Sun 11/18/18	12:22	NY	120 hrs	13	15	15	17	13	15	16	16	14	0	134	10	
	Mon 11/19/18	16:13	CM	144 hrs	14	16	15	16	14	14	16	17	15	5	142	10	
	Tue 11/20/18			168 hrs											0		
	Wed 11/21/18			192 hrs											0		
Total # of Young Produced:					32	35	36	39	31	34	35	40	35	10	Total Offspring at Renewal	Total Young Produced	
Comments:																327	327

CETIS Summary Report

Report Date: 20 Nov-18 14:45 (p 1 of 1)
 Test Code/ID: L1043601(CD) / 00-1567-8347

Ceriodaphnia 7-d Survival and Reproduction Test Pace National

Batch ID: 00-8593-0037	Test Type: Reproduction-Survival (7d)	Analyst: Clarissa Moore
Start Date: 13 Nov-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 19 Nov-18	Species: Ceriodaphnia dubia	Brine:
Test Length: 6d 0h	Taxon: Branchiopoda	Source: In-House Culture Age: <24

Sample ID: 15-4257-5574	Code: 5BF1D5D6	Project:
Sample Date: 12 Nov-18 08:00	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)
Receipt Date: 13 Nov-18 08:45	CAS (PC):	Station:
Sample Age: 16h	Client: Poly Env.- Headland STP	

Comments:
 Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
07-1955-3225	7d Survival Rate	Fisher Exact Test	1.0000	100% passed 7d survival rate	1
09-0932-6707	Reproduction	Dunnnett Multiple Comparison Test	0.8135	100% passed reproduction	1
04-0470-8139	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.9758	100% passed reproduction	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
07-1955-3225	7d Survival Rate	Control Resp	1	0.8	>>	Yes	Passes Criteria
04-0470-8139	Reproduction	Control Resp	29.6	15	>>	Yes	Passes Criteria
09-0932-6707	Reproduction	Control Resp	29.6	15	>>	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	29.6	24.85	34.35	14	35	2.099	6.637	22.42%	0.00%
100		10	32.7	26.67	38.73	10	40	2.667	8.433	25.79%	-10.47%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	14	35	31	34	34	33	31	33	29	22
100		32	35	36	39	31	34	35	40	35	10

CETIS Analytical Report

Report Date: 20 Nov-18 14:45 (p 1 of 1)
 Test Code/ID: L1043601(CD) / 00-1567-8347

Ceriodaphnia 7-d Survival and Reproduction Test						Pace National					
Analysis ID: 07-1955-3225	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.4		Status Level: 1							
Analyzed: 20 Nov-18 14:45	Analysis: Single 2x2 Contingency Table										
Batch ID: 00-8593-0037	Test Type: Reproduction-Survival (7d)	Analyst: Clarissa Moore		Diluent: Mod-Hard Synthetic Water		Brine:					
Start Date: 13 Nov-18	Protocol: EPA/821/R-02-013 (2002)	Source: In-House Culture		Age: <24							
Ending Date: 19 Nov-18	Species: Ceriodaphnia dubia										
Test Length: 6d 0h	Taxon: Branchiopoda										
Sample ID: 15-4257-5574	Code: 5BF1D5D6	Project:		Source: NPDES Permit # (XX99999999)							
Sample Date: 12 Nov-18 08:00	Material: POTW Effluent	Station:									
Receipt Date: 13 Nov-18 08:45	CAS (PC):										
Sample Age: 16h	Client: Poly Env.- Headland STP										
Comments:											
Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03											
Data Transform		Alt Hyp		Comparison Result							
Untransformed		C > T		100% passed 7d survival rate							
Fisher Exact Test											
Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)					
Dilution Water		100	1.0000	Exact	1.0000	Non-Significant Effect					
Test Acceptability Criteria		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	1	0.8	>>	Yes	Passes Criteria						
Data Summary											
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect				
0	D	10	0	10	1	0	0.0%				
100		10	0	10	1	0	0.0%				
7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Analytical Report

Report Date: 20 Nov-18 14:45 (p 2 of 2)
 Test Code/ID: L1043601(CD) / 00-1567-8347

Ceriodaphnia 7-d Survival and Reproduction Test										Pace National	
Analysis ID: 09-0932-6707		Endpoint: Reproduction			CETIS Version: CETISv1.9.4						
Analyzed: 20 Nov-18 14:45		Analysis: Parametric-Control vs Treatments			Status Level: 1						
Batch ID: 00-8593-0037		Test Type: Reproduction-Survival (7d)			Analyst: Clarissa Moore						
Start Date: 13 Nov-18		Protocol: EPA/821/R-02-013 (2002)			Diluent: Mod-Hard Synthetic Water						
Ending Date: 19 Nov-18		Species: Ceriodaphnia dubia			Brine:						
Test Length: 6d 0h		Taxon: Branchiopoda			Source: In-House Culture		Age: <24				
Sample ID: 15-4257-5574		Code: 5BF1D5D6			Project:						
Sample Date: 12 Nov-18 08:00		Material: POTW Effluent			Source: NPDES Permit # (XX99999999)						
Receipt Date: 13 Nov-18 08:45		CAS (PC):			Station:						
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments:											
Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03											
Data Transform				Alt Hyp		Comparison Result				PMSD	
Untransformed				C > T		100% passed reproduction				19.88%	
Dunnett Multiple Comparison Test											
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	-0.9135	1.734	5.885	18	CDF	0.8135	Non-Significant Effect		
Test Acceptability Criteria											
		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	29.6	15	>>	Yes	Passes Criteria						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	48.05	48.05	1	0.8344	0.3731	Non-Significant Effect					
Error	1036.5	57.5833	18								
Total	1084.55		19								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.615	6.541	0.4865	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.7361	0.866	1.1E-04	Non-Normal Distribution						
Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	29.6	24.85	34.35	32	14	35	2.099	22.42%	0.00%
100		10	32.7	26.67	38.73	35	10	40	2.667	25.79%	-10.47%
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	14	35	31	34	34	33	31	33	29	22
100		32	35	36	39	31	34	35	40	35	10

CETIS Analytical Report

Report Date: 20 Nov-18 14:45 (p 1 of 2)
 Test Code/ID: L1043601(CD) / 00-1567-8347

Ceriodaphnia 7-d Survival and Reproduction Test										Pace National	
Analysis ID: 04-0470-8139		Endpoint: Reproduction			CETIS Version: CETISv1.9.4						
Analyzed: 20 Nov-18 14:45		Analysis: Nonparametric-Two Sample			Status Level: 1						
Batch ID: 00-8593-0037		Test Type: Reproduction-Survival (7d)			Analyst: Clarissa Moore						
Start Date: 13 Nov-18		Protocol: EPA/821/R-02-013 (2002)			Diluent: Mod-Hard Synthetic Water						
Ending Date: 19 Nov-18		Species: Ceriodaphnia dubia			Brine:						
Test Length: 6d 0h		Taxon: Branchiopoda			Source: In-House Culture		Age: <24				
Sample ID: 15-4257-5574		Code: 5BF1D5D6			Project:						
Sample Date: 12 Nov-18 08:00		Material: POTW Effluent			Source: NPDES Permit # (XX99999999)						
Receipt Date: 13 Nov-18 08:45		CAS (PC):			Station:						
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments:											
Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03											
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C > T			100% passed reproduction				19.88%		
Wilcoxon Rank Sum Two-Sample Test											
Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	130.5	n/a	3	18	Exact	0.9758	Non-Significant Effect		
Test Acceptability Criteria		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	29.6	15	>>	Yes	Passes Criteria						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	48.05	48.05	1	0.8344	0.3731	Non-Significant Effect					
Error	1036.5	57.5833	18								
Total	1084.55		19								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.615	6.541	0.4865	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.7361	0.866	1.1E-04	Non-Normal Distribution						
Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	29.6	24.85	34.35	32	14	35	2.099	22.42%	0.00%
100		10	32.7	26.67	38.73	35	10	40	2.667	25.79%	-10.47%
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	14	35	31	34	34	33	31	33	29	22
100		32	35	36	39	31	34	35	40	35	10

TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow) 7-Day Survival & Weight Data

Poly Env. - Headland STP

Test Date: November 13-20, 2018

NPDES #: AL0027014

NUMBER OF SURVIVORS									
Sample Distribution		Sample #1 Tues/Wed		Sample #2 Thurs/Fri		Sample #3 Sat/Sun/Mon			
Day of the Week and Date		Tue 11/13/18	Wed 11/14/18	Thu 11/15/18	Fri 11/16/18	Sat 11/17/18	Sun 11/18/18	Mon 11/19/18	Tue 11/20/18
Effluent Conc. In%	ID of Rep.	0 hours	24 hours	48 hours	72 hours	96 hours	120 hours	144 hours	168 hours
Control #13	A: 1	10	9	9	9	9	9	9	9
	B: 2	10	10	10	10	10	10	10	10
	C: 1	10	10	10	10	10	10	10	10
	D: 2	10	10	10	10	10	10	10	10
100	A: 2	10	10	10	10	10	10	10	10
	B: 1	10	10	10	10	10	10	10	10
	C: 2	10	10	10	10	10	10	10	10
	D: 1	10	10	10	10	10	10	10	10
Initials of Analyst Checking Survival		MIL/JB	JB	NY	AME	MIL/MH	JB	NY	MIL/KR
Time that Minnows were Examined:		15:55	11:09	14:11	11:30	13:50	11:53	11:31	11:21
Carboy used to dilute sample:		S 11-12	S 11-12	A 11-14	E 11-15	S 11-14	S 11-17	S 11-18	

Fish Cup Batch/Lot: AUG1718UR3

COMMENTS: Minnows used in this test are from ESC Lot#

111218HD Minnows were hatched on 11/12/2018

Survival ≥ 80%?
YES NO

YES NO

≥ 0.25mg Average Weight
in Surviving Controls?
YES NO

YES NO

Control Valid?

YES NO

WEIGHT DATA for SURVIVING MINNOWS						
	Weight Empty Boats (mg)	Boat w/ Fish (mg)	Weight of Larvae (mg)	Mean Weight of Larvae (mg)	Total of Mean	Mean per Concentration
Control	A	1300.55	1303.83	3.28	1.3880	0.3470
	B	1302.9	1306.41	3.51		
	C	1306.01	1309.05	3.04		
	D	1302.09	1306.14	4.05		
100	A	1311.82	1315.41	3.59	1.2660	0.3165
	B	1317.63	1320.59	2.96		
	C	1309.4	1312.42	3.02		
	D	1319.21	1322.3	3.09		

Analyst: AME JB

Date & Time Put in Oven	Date & Time Removed
11-20-18 @ 11:21	11-21-18 @ 12:30

Oven Temp:	Oven Temp:
70°C	73°C

Analyst:	Analyst:
MIL	JB

Login #: L1043601 -01,-02,-03

CETIS Summary Report

Report Date: 21 Nov-18 13:30 (p 1 of 1)

Test Code/ID: L1043601(PP) / 09-8110-8368

Fathead Minnow 7-d Larval Survival and Growth Test **Pace National**

Batch ID: 09-6959-0060	Test Type: Growth-Survival (7d)	Analyst: Clarissa Moore
Start Date: 13 Nov-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 20 Nov-18	Species: Pimephales promelas	Brine:
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <36

Sample ID: 10-4433-2680	Code: 3E3F4088	Project:
Sample Date: 12 Nov-18 08:00	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)
Receipt Date: 13 Nov-18 08:45	CAS (PC):	Station:
Sample Age: 16h	Client: Poly Env.- Headland STP	

Comments:
Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
09-4280-4157	7d Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	100% passed 7d survival rate	1
01-8763-5364	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	0.1423	100% passed mean dry biomass-mg	1
08-7944-3466	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1423	100% passed mean dry biomass-mg	1

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
09-4280-4157	7d Survival Rate	Control Resp	0.975	0.8	>>	Yes	Passes Criteria
01-8763-5364	Mean Dry Biomass-mg	Control Resp	0.347	0.25	>>	Yes	Passes Criteria
08-7944-3466	Mean Dry Biomass-mg	Control Resp	0.347	0.25	>>	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.347	0.2783	0.4157	0.304	0.405	0.02158	0.04317	12.44%	0.00%
100		4	0.3165	0.2706	0.3624	0.296	0.359	0.01442	0.02883	9.11%	8.79%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.9000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.328	0.351	0.304	0.405
100		0.359	0.296	0.302	0.309

CETIS Analytical Report

Report Date: 21 Nov-18 13:30 (p 1 of 3)
 Test Code/ID: L1043601(PP) / 09-8110-8368

Fathead Minnow 7-d Larval Survival and Growth Test										Pace National	
Analysis ID: 09-4280-4157		Endpoint: 7d Survival Rate				CETIS Version: CETISv1.9.4					
Analyzed: 21 Nov-18 13:30		Analysis: Nonparametric-Two Sample				Status Level: 1					
Batch ID: 09-6959-0060		Test Type: Growth-Survival (7d)				Analyst: Clarissa Moore					
Start Date: 13 Nov-18		Protocol: EPA/821/R-02-013 (2002)				Diluent: Mod-Hard Synthetic Water					
Ending Date: 20 Nov-18		Species: Pimephales promelas				Brine:					
Test Length: 7d 0h		Taxon: Actinopterygii				Source: Aquatic Biosystems, CO				Age: <36	
Sample ID: 10-4433-2680		Code: 3E3F4088				Project:					
Sample Date: 12 Nov-18 08:00		Material: POTW Effluent				Source: NPDES Permit # (XX99999999)					
Receipt Date: 13 Nov-18 08:45		CAS (PC):				Station:					
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments:											
Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03											
Data Transform		Alt Hyp				Comparison Result				PMSD	
Angular (Corrected)		C > T				100% passed 7d survival rate				5.20%	
Wilcoxon Rank Sum Two-Sample Test											
Control	vs.	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	20	n/a	1	6	Exact	1.0000	Non-Significant Effect		
Test Acceptability Criteria											
Attribute		Test Stat	TAC Limits		Overlap	Decision					
Control Resp		0.975	0.8	>>	Yes	Passes Criteria					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0033199		0.0033199		1	1	0.3559	Non-Significant Effect			
Error	0.0199195		0.0033199		6						
Total	0.0232394				7						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Levene Equality of Variance Test				9	13.75	0.0240	Equal Variances			
Variances	Mod Levene Equality of Variance Test				1	13.75	0.3559	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.7065	0.6451	0.0027	Non-Normal Distribution			
7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-2.56%
Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	0.00%
100		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	-2.97%
7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	0.9000	1.0000	1.0000	1.0000						
100		1.0000	1.0000	1.0000	1.0000						
Angular (Corrected) Transformed Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	1.249	1.412	1.412	1.412						
100		1.412	1.412	1.412	1.412						

CETIS Analytical Report

Report Date: 21 Nov-18 13:30 (p 3 of 3)
 Test Code/ID: L1043601(PP) / 09-8110-8368

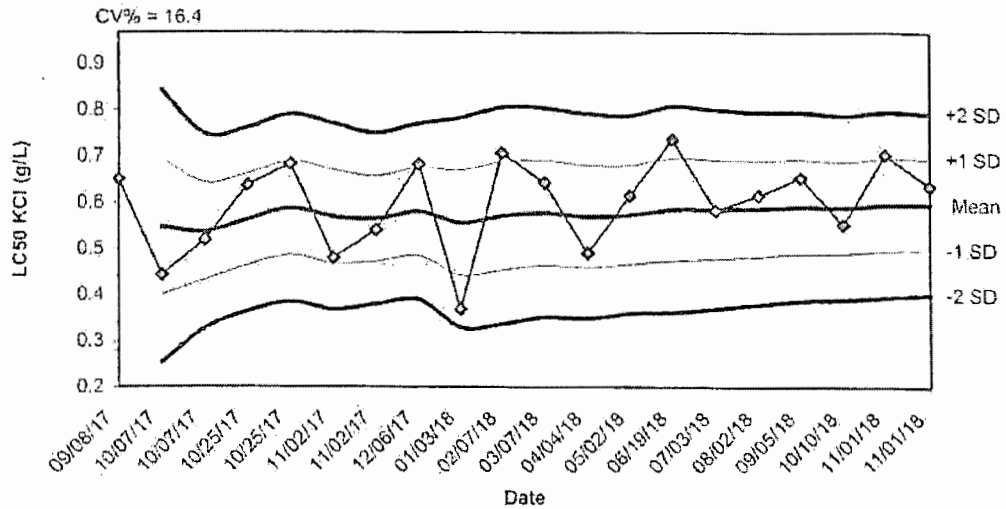
Fathead Minnow 7-d Larval Survival and Growth Test										Pace National	
Analysis ID: 01-8763-5364		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.4						
Analyzed: 21 Nov-18 13:30		Analysis: Parametric-Control vs Treatments			Status Level: 1						
Batch ID: 09-6959-0060		Test Type: Growth-Survival (7d)			Analyst: Clarissa Moore						
Start Date: 13 Nov-18		Protocol: EPA/821/R-02-013 (2002)			Diluent: Mod-Hard Synthetic Water						
Ending Date: 20 Nov-18		Species: Pimephales promelas			Brine:						
Test Length: 7d 0h		Taxon: Actinopterygii			Source: Aquatic Biosystems, CO		Age: <36				
Sample ID: 10-4433-2680		Code: 3E3F4088			Project:						
Sample Date: 12 Nov-18 08:00		Material: POTW Effluent			Source: NPDES Permit # (XX99999999)						
Receipt Date: 13 Nov-18 08:45		CAS (PC):			Station:						
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments: Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03											
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C > T			100% passed mean dry biomass-mg				14.54%		
Dunnett Multiple Comparison Test											
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	1.175	1.943	0.050	6	CDF	0.1423	Non-Significant Effect		
Test Acceptability Criteria											
Attribute		Test Stat	TAC Limits		Overlap	Decision					
Control Resp		0.347	0.25	>>	Yes	Passes Criteria					
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0018600		0.0018600		1	1.38	0.2845	Non-Significant Effect			
Error	0.0080843		0.0013474		6						
Total	0.0099444				7						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.242	47.47	0.5245	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.9036	0.6451	0.3110	Normal Distribution			
Mean Dry Biomass-mg Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.347	0.2783	0.4157	0.3395	0.304	0.405	0.02158	12.44%	0.00%
100		4	0.3165	0.2706	0.3624	0.3055	0.296	0.359	0.01442	9.11%	8.79%
Mean Dry Biomass-mg Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	0.328	0.351	0.304	0.405						
100		0.359	0.296	0.302	0.309						

CETIS Analytical Report

Report Date: 21 Nov-18 13:30 (p 2 of 3)
 Test Code/ID: L1043601(PP) / 09-8110-8368

Fathead Minnow 7-d Larval Survival and Growth Test										Pace National	
Analysis ID: 08-7944-3466		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.4						
Analyzed: 21 Nov-18 13:30		Analysis: Parametric-Two Sample			Status Level: 1						
Batch ID: 09-6959-0060		Test Type: Growth-Survival (7d)			Analyst: Clarissa Moore						
Start Date: 13 Nov-18		Protocol: EPA/821/R-02-013 (2002)			Diluent: Mod-Hard Synthetic Water						
Ending Date: 20 Nov-18		Species: Pimephales promelas			Brine:						
Test Length: 7d 0h		Taxon: Actinopterygii			Source: Aquatic Biosystems, CO		Age: <36				
Sample ID: 10-4433-2680		Code: 3E3F4088			Project:						
Sample Date: 12 Nov-18 08:00		Material: POTW Effluent			Source: NPDES Permit # (XX99999999)						
Receipt Date: 13 Nov-18 08:45		CAS (PC):			Station:						
Sample Age: 16h		Client: Poly Env.- Headland STP									
Comments:											
Poly Env.- Headland STP (AL0027014) L1043601 -01,-02,-03											
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C > T			100% passed mean dry biomass-mg				14.53%		
Equal Variance t Two-Sample Test											
Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Dilution Water		100	1.175	1.943	0.050	6	CDF	0.1423	Non-Significant Effect		
Test Acceptability Criteria		TAC Limits									
Attribute	Test Stat	Lower	Upper	Overlap	Decision						
Control Resp	0.347	0.25	>>	Yes	Passes Criteria						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0018600	0.0018600	1	1.38	0.2845	Non-Significant Effect					
Error	0.0080843	0.0013474	6								
Total	0.0099444		7								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.242	47.47	0.5245	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.9036	0.6451	0.3110	Normal Distribution						
Mean Dry Biomass-mg Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.347	0.2783	0.4157	0.3395	0.304	0.405	0.02158	12.44%	0.00%
100		4	0.3165	0.2706	0.3624	0.3055	0.296	0.359	0.01442	9.11%	8.79%
Mean Dry Biomass-mg Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	D	0.328	0.351	0.304	0.405						
100		0.359	0.296	0.302	0.309						

Control Chart for November 2018 Acute C. dubia Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
09/08/17	0.6515					
10/07/17	0.4433	0.5474	0.4002	0.2530	0.6946	0.8418
10/07/17	0.5196	0.5381	0.4328	0.3275	0.6435	0.7488
10/25/17	0.6373	0.5629	0.4637	0.3644	0.6622	0.7615
10/25/17	0.6830	0.5869	0.4856	0.3842	0.6883	0.7897
11/02/17	0.4798	0.5691	0.4684	0.3678	0.6697	0.7704
11/02/17	0.5402	0.5850	0.4724	0.3799	0.6575	0.7500
12/06/17	0.6830	0.5797	0.4844	0.3891	0.6750	0.7703
01/03/18	0.3693	0.5563	0.4429	0.3295	0.6698	0.7832
02/07/18	0.7071	0.5714	0.4543	0.3372	0.6885	0.8056
03/07/18	0.6429	0.5779	0.4648	0.3516	0.6911	0.8042
04/04/18	0.4910	0.5707	0.4599	0.3491	0.6814	0.7922
05/02/18	0.6156	0.5741	0.4673	0.3606	0.6809	0.7877
06/19/18	0.7368	0.5857	0.4743	0.3629	0.6972	0.8086
07/03/18	0.5835	0.5856	0.4782	0.3709	0.6930	0.8003
08/02/18	0.6156	0.5875	0.4835	0.3795	0.6915	0.7955
09/05/18	0.6547	0.5914	0.4894	0.3874	0.6934	0.7954
10/10/18	0.5535	0.5893	0.4900	0.3906	0.6887	0.7880
11/01/18	0.7040	0.5954	0.4953	0.3952	0.6954	0.7955
11/01/18	0.6373	0.5975	0.4996	0.4017	0.6953	0.7932

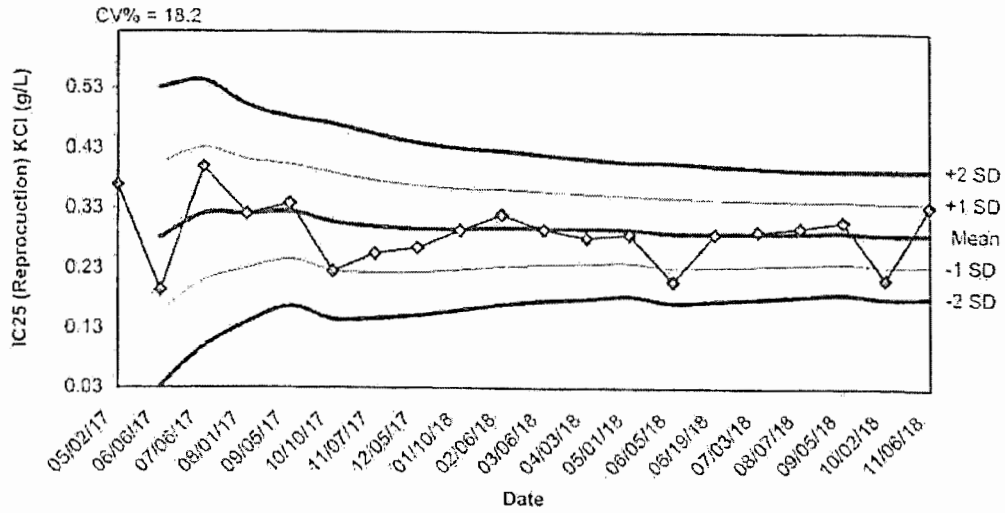


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

November 2018 Reference Toxicant Test

Control Chart for November 2018 Chronic C.dubia Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/02/17	0.3693					
06/06/17	0.1938	0.2816	0.1575	0.0334	0.4056	0.5297
07/06/17	0.3988	0.3206	0.2098	0.0990	0.4315	0.5423
08/01/17	0.3209	0.3207	0.2302	0.1397	0.4112	0.5017
09/05/17	0.3382	0.3242	0.2454	0.1667	0.4030	0.4817
10/10/17	0.2255	0.3078	0.2266	0.1454	0.3889	0.4701
11/07/17	0.2558	0.3003	0.2237	0.1470	0.3770	0.4536
12/05/17	0.2650	0.2959	0.2239	0.1518	0.3680	0.4400
01/10/18	0.2944	0.2957	0.2284	0.1610	0.3631	0.4305
02/06/18	0.3203	0.2982	0.2342	0.1702	0.3622	0.4262
03/06/18	0.2956	0.2980	0.2372	0.1765	0.3587	0.4194
04/03/18	0.2819	0.2966	0.2385	0.1804	0.3547	0.4128
05/01/18	0.2879	0.2960	0.2403	0.1846	0.3516	0.4073
06/05/18	0.2093	0.2898	0.2315	0.1732	0.3480	0.4063
06/19/18	0.2882	0.2897	0.2335	0.1773	0.3458	0.4020
07/03/18	0.2935	0.2899	0.2356	0.1814	0.3442	0.3984
08/07/18	0.2994	0.2905	0.2379	0.1853	0.3431	0.3957
09/05/18	0.3091	0.2915	0.2403	0.1891	0.3427	0.3939
10/02/18	0.2133	0.2874	0.2345	0.1816	0.3403	0.3932
11/06/18	0.3355	0.2898	0.2372	0.1846	0.3424	0.3950

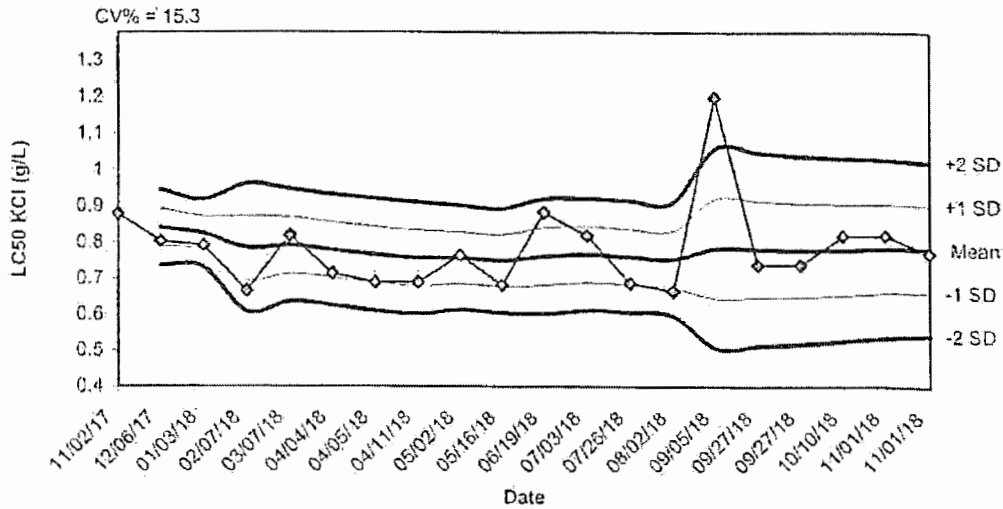


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 FAX

November 2018 Reference Toxicant Test

Control Chart for November 2018 Acute Minnow Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/02/17	0.8785					
12/06/17	0.8045	0.8415	0.7892	0.7368	0.8938	0.9462
01/03/18	0.7917	0.8249	0.7780	0.7312	0.8718	0.9186
02/07/18	0.6657	0.7851	0.6968	0.6085	0.8734	0.9617
03/07/18	0.8196	0.7920	0.7140	0.6359	0.8700	0.9481
04/04/18	0.7135	0.7789	0.7021	0.6253	0.8557	0.9325
04/05/18	0.6892	0.7661	0.6882	0.6104	0.8440	0.9218
04/11/18	0.6892	0.7565	0.6794	0.6024	0.8335	0.9106
05/02/18	0.7647	0.7574	0.6853	0.6131	0.8295	0.9017
05/16/18	0.6817	0.7498	0.6777	0.6056	0.8219	0.8940
06/19/18	0.8842	0.7620	0.6826	0.6031	0.8415	0.9210
07/03/18	0.8196	0.7668	0.6892	0.6117	0.8444	0.9220
07/26/18	0.6875	0.7607	0.6833	0.6058	0.8382	0.9157
08/02/18	0.6657	0.7540	0.6753	0.5966	0.8326	0.9113
09/05/18	1.2000	0.7837	0.6458	0.5079	0.9216	1.0594
09/27/18	0.7387	0.7809	0.6472	0.5135	0.9145	1.0482
09/27/18	0.7387	0.7784	0.6486	0.5187	0.9082	1.0381
10/10/18	0.8196	0.7807	0.6544	0.5280	0.9070	1.0333
11/01/18	0.8196	0.7827	0.6596	0.5365	0.9058	1.0289
11/01/18	0.7715	0.7822	0.6623	0.5425	0.9020	1.0218

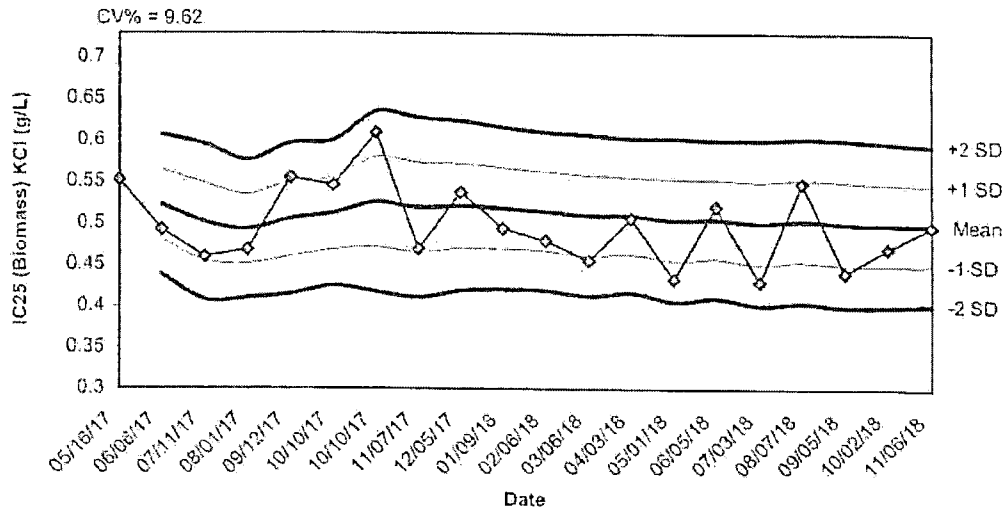


12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

November 2018 Reference Toxicant Test

Control Chart for November 2018 Chronic Minnow Reference Toxicant



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/16/17	0.5522					
06/06/17	0.4925	0.5224	0.4801	0.4379	0.5646	0.6068
07/11/17	0.4597	0.5015	0.4546	0.4077	0.5484	0.5953
08/01/17	0.4685	0.4932	0.4515	0.4098	0.5349	0.5766
09/12/17	0.5547	0.5055	0.4601	0.4148	0.5509	0.5963
10/10/17	0.5459	0.5123	0.4684	0.4246	0.5561	0.5999
10/10/17	0.6094	0.5261	0.4718	0.4175	0.5804	0.6347
11/07/17	0.4694	0.5190	0.4649	0.4108	0.5732	0.6273
12/05/17	0.5379	0.5211	0.4701	0.4191	0.5721	0.6232
01/09/18	0.4941	0.5184	0.4696	0.4207	0.5673	0.6161
02/06/18	0.4900	0.5149	0.4672	0.4194	0.5627	0.6105
03/06/18	0.4562	0.5100	0.4614	0.4128	0.5586	0.6072
04/03/18	0.5069	0.5098	0.4633	0.4167	0.5563	0.6029
05/01/18	0.4335	0.5044	0.4552	0.4061	0.5535	0.6026
06/05/18	0.5210	0.5055	0.4579	0.4104	0.5530	0.6006
07/03/18	0.4300	0.5007	0.4511	0.4014	0.5504	0.6001
08/07/18	0.5491	0.5036	0.4541	0.4046	0.5531	0.6026
09/05/18	0.4410	0.5001	0.4499	0.3996	0.5503	0.6006
10/02/18	0.4705	0.4986	0.4493	0.4000	0.5478	0.5971
11/06/18	0.4976	0.4985	0.4505	0.4026	0.5465	0.5944



12065 Lebanon Rd
Mt. Juliet, TN 37122

(615) 773-7549
(615) 758-5859 Fax

November 2018 Reference Toxicant Test



Datasheet printed by: BE

Control Water (Tank ID): § 10 31 18

Control Water (Begin Use Date): 11-1-18

Ceriodaphnia dubia Acute Reference Toxicant Test "B"

Month of: September 2018

Test Start Date: 11-1-18

Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050064

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)	Analyst:	Analyst: <u>ML</u>		Analyst: <u>ML</u>	
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	Ceriodaphnia	25.0 °C	25.0 °C	24.8 °C	24.8 °C
0.0625	Ceriodaphnia	25.0 °C	24.8 °C	24.9 °C	24.9 °C
0.125	Ceriodaphnia	25.0 °C	24.8 °C	24.9 °C	24.9 °C
0.25	Ceriodaphnia	25.0 °C	24.8 °C	24.9 °C	24.9 °C
0.5	Ceriodaphnia	25.0 °C	24.9 °C	24.8 °C	24.8 °C
1	Ceriodaphnia	25.3 °C	24.8 °C	24.8 °C	24.8 °C

① Reading missed Analyst Error
ML 11-3-18

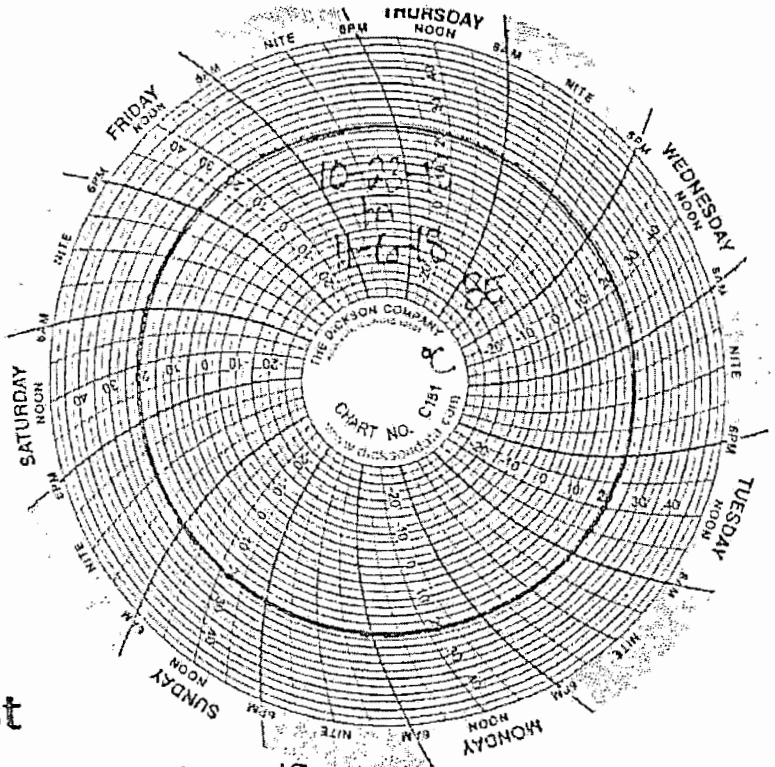
November 2018 Reference Toxicant Test

Sample ID: Ceriodaphnia dubia Acute Reference Toxicant Test

Chart Devices Used in
Thermo-Kool Walk-in Incubator

Dickson (small chart)

~~Thermo-Kool (large chart)~~



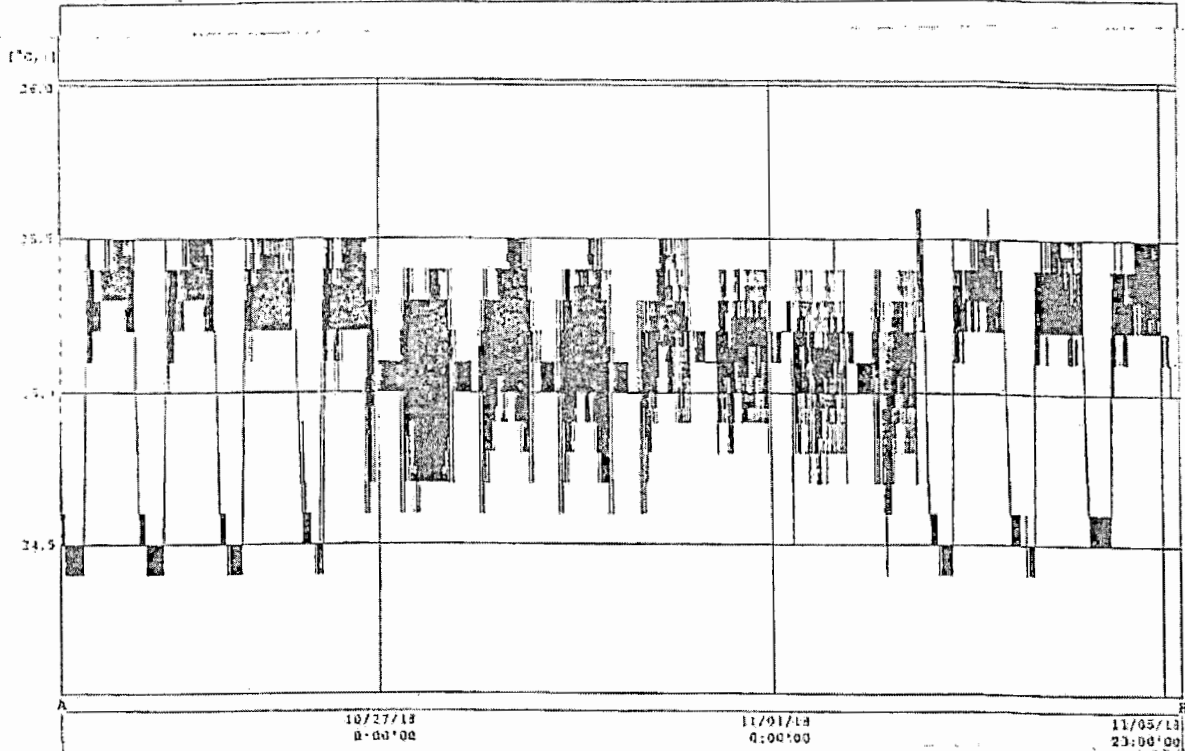
November 2018 Reference Toxicant Test

Two Weeks From 10-23-18 to 11-6-18

BE

Thermo Graph for Windows

11/05/2018 13:45:25



ch	Name	Intvl.	Sample	Cur.A	Cur.B	Ac->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
2	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
3	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
4	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C

Cur.A Date : 10/22/2018 22:55'32
 Cur.B Date : 11/06/2018 4:34'12
 diff. A-B : 14 06:38'40.000

Data Range 10/22/2018 22:55'32-11/06/2018 4:34'12
 Calc.Range 10/18/2018 22:36'50-11/06/2018 2:15'11

ACUTE TOXICITY TEST DATA SHEET - *Ceriodaphnia dubia* (water flea)

Client **C.dubia 48-hr Acute Reference Toxicant Test "B"**

Toxicant Used: potassium chloride

Template Name: MILKWed
 Month of: September 2018

Begin 11-1-18
 End 11-3-18

Time 15:10 *end test +/- 1 hr from start time
 Time 14:54

Test Duration: 48 hours
 Dilution Water: Moderately Hard SDW

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE <i>C.dubia</i>		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	5	5	5
	B: 5	5	5	5
	C: 5	5	5	5
	D: 2	5	5	5
0.0625	A: 2	5	5	5
	B: 6	5	5	4
	C: 4	5	5	5
	D: 4	5	5	5
0.125	A: 3	5	5	5
	B: 4	5	5	5
	C: 3	5	5	5
	D: 1	5	5	5
0.25	A: 4	5	5	5
	B: 3	5	5	5
	C: 2	5	5	5
	D: 1	5	5	5
0.5	A: 5	5	5	5
	B: 6	5	5	5
	C: 6	5	5	5
	D: 5	5	5	5
1.0	A: 6	5	0	0
	B: 2	5	0	0
	C: 1	5	1	0
	D: 3	5	0	0

Check here to confirm final temperatures have been recorded on the temperature benchsheet.

11/3/18

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
8.1	8.0	8.1	8.1
7.9	7.8	8.3	8.2
8.0	8.0 / 7.9	8.3	8.3 / 8.2
8.0	7.9	8.4	8.3
8.0	7.9	8.3	8.2
7.9	7.9	8.3	8.1 / 7.8

November 2018 Reference Toxicant Test

Conductivity (umhos/cm)	
0 hrs	final
261.2	266.3
784	779
504	508 / 511
693	706
1172	1202
2188	213 / 2313 / 2319

* NJC 11/03/18

	Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	40	58
1.0 Concentration	< 0.2	48	53

Lot # of KCl Stock Solution: 110118 KCL

34 of 72

C. dubia Cup Batch/Lot: 5000T84415
 Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.
 C. dubia are < 24 hrs old; C. dubia were harvested from tray 103118WB1/103118XA2
 on 10/31/18 @ 16:45 to 11/1/18 @ 9:00.
 C. dubia were last fed 11/1/18 @ 11:00.



CETIS Summary Report

Report Date: 07 Nov-18 11:33 (p 1 of 1)
 Test Code/ID: RTCD110118(B) / 11-6291-5705

Ceriodaphnia 48-h Acute Survival Test	Pace National
---------------------------------------	---------------

Batch ID: 13-0000-9885	Test Type: Survival (48h)	Analyst: Clarissa Moore
Start Date: 01 Nov-18	Protocol: EPA/821/R-02-012 (2002)	Diluent: Mid-Hard Synthetic Water
Ending Date: 03 Nov-18	Species: Ceriodaphnia dubia	Brine:
Test Length: 48h	Taxon: Branchiopoda	Source: In-House Culture Age: <24

Sample ID: 06-9921-8899	Code: 29AD3403	Project:
Sample Date: 31 Oct-18	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)
Receipt Date: 01 Nov-18	CAS (PC):	Station:
Sample Age: 24h	Client: Reference Toxicant	

Comments:
 Reference Toxicant (November 2018) C.dubia *Acute B*

Point Estimate Summary									
Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S	
16-5679-2145	48h Survival Rate	Trimmed Spearman-Kärber	LC50	0.704	0.6917	0.7166	142	1	

Test Acceptability								TAC Limits	
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision		
16-5679-2145	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria		

48h Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.0625		4	0.9500	0.7909	1.0000	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
0.125		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
1		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

48h Survival Rate Detail						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	D	1.0000	1.0000	1.0000	1.0000	
0.0625		1.0000	0.8000	1.0000	1.0000	
0.125		1.0000	1.0000	1.0000	1.0000	
0.25		1.0000	1.0000	1.0000	1.0000	
0.5		1.0000	1.0000	1.0000	1.0000	
1		0.0000	0.0000	0.0000	0.0000	

48h Survival Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	D	5/5	5/5	5/5	5/5	
0.0625		5/5	4/5	5/5	5/5	
0.125		5/5	5/5	5/5	5/5	
0.25		5/5	5/5	5/5	5/5	
0.5		5/5	5/5	5/5	5/5	
1		0/5	0/5	0/5	0/5	

November 2018 Reference Toxicant Test



Datasheet printed by: BE

Control Water (Tank ID): 2103118

Control Water (Begin Use Date): 11-18

Ceriodaphnia dubia Acute Reference Toxicant Test "A"

Month of: September 2018

Test Start Date: 11-1-18

Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050064

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)	Ceriodaphnia	Analyst: <u>NH</u>	Analyst: <u>ZE</u>	Analyst: <u>MA</u>	Analyst: <u>MH</u>
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	Ceriodaphnia	24.2 °C	25.0 °C	24.7 °C	24.7 °C
0.0625	Ceriodaphnia	24.6 °C	°C	24.8 °C	24.8 °C
0.125	Ceriodaphnia	24.6 °C	°C	24.9 °C	24.9 °C
0.25	Ceriodaphnia	24.8 °C	°C	24.9 °C	24.9 °C
0.5	Ceriodaphnia	25.0 °C	°C	24.9 °C	24.9 °C
1	Ceriodaphnia	25.0 °C	↓ °C	— °C	— °C

Ⓢ Reading Missed
Analyst Error
MH 11-3-18

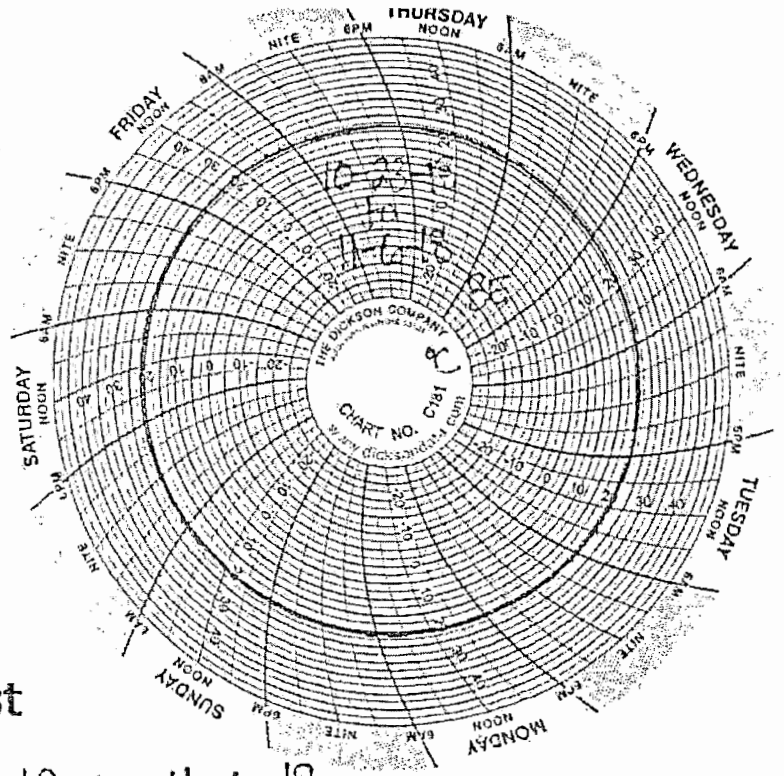
November 2018 Reference Toxicant Test

Sample ID: Ceriodaphnia dubia Acute Reference Toxicant Test

Chart Devices Used in
Thermo-Kool Walk-in Incubator

Dickson (small chart)

~~Thermo-Kool (large chart)~~



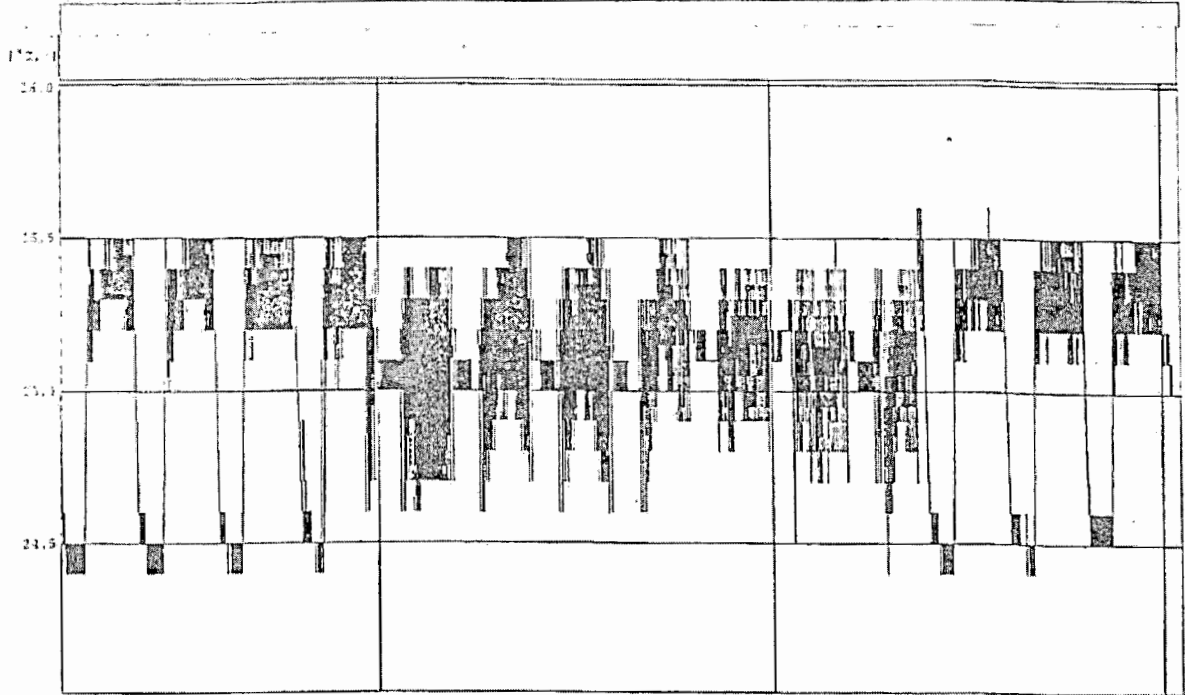
November 2018 Reference Toxicant Test

Two Weeks From 10-23-18 to 11-6-18

BE

Thermo Graph for Windows

11/06/2018 15:46:25



ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
2	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
3	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
4	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C

Cur.A Date : 10/22/2018 22:55'32
 Cur.B Date : 11/06/2018 4:34'12
 diff. A-B : 14 06:38'40.000

Data Range 10/22/2018 22:55'32-11/06/2018 4:34'12
 Calc.Range 10/18/2018 22:36'50-11/06/2018 2:15'11

ACUTE TOXICITY TEST DATA SHEET - *Ceriodaphnia dubia* (water flea)

Client **C.dubia 48-hr Acute Reference Toxicant Test "A"**

Toxicant Used: potassium chloride

Template Name: Violet
 Month of: **September 2018**

Begin 11-1-18
 End 11-3-18

Time 15:28 *end test +/- 1 hr from start time
 Time 14:45

Test Duration: 48 hours
 Dilution Water: Moderately Hard SDW

© M4 11-3-18

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE <i>C.dubia</i>		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	5	5	5
	B: 2	5	5	5
	C: 5	5	5	5
	D: 5	5	5	5
0.0625	A: 2	5	5	5
	B: 1	5	5	5
	C: 4	5	5	5
	D: 6	5	5	5
0.125	A: 3	5	5	5
	B: 3	5	5	5
	C: 6	5	5	5
	D: 2	5	5	4
0.25	A: 4	5	5	5
	B: 5	5	5	5
	C: 3	5	5	5
	D: 1	5	5	5
0.5	A: 5	5	5	5
	B: 6	5	5	4
	C: 3	5	5	5
	D: 4	5	4	4
1.0	A: 6	5	0	0
	B: 4	5	0	0
	C: 1	5	0	0
	D: 3	5	0	0

Check here to confirm final temperatures have been recorded on the temperature benchsheet.

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
initial 8.1	8.0	initial 8.1	8.0
initial 7.4	7.8	initial 8.3	7.9
initial 8.0	8.0	initial 8.3	8.1
initial 8.0	8.0 / 8.0	initial 8.4	8.1 / 8.1
initial 8.0	8.0	initial 8.3	8.2
initial 7.9	7.9 ^Δ	initial 8.3	8.1 ^Δ

November 2018 Reference Toxicant Test

Conductivity (umhos/cm)	
0 hrs	final
initial 2412	2618
initial 789	802
initial 504	508
initial 693	706 / 711
initial 1172	1202
initial 2188	2171 ^Δ

Checked By: ED AMY
 Biologist: DWS Time: 15:28
AME/MSK/M4 Time: 09:50 / 14:45

Initial Readings By: N4 Time: 14:35

^Δ Readings taken 11-2-18 10:30 BE

Final Readings By: M4 Time: 15:17

	Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	40	53
1.0 Concentration	< 0.2	48	53

Lot # of KCl Stock Solution: 110118KCL

C. dubia Cup Batch/Lot: 5000T84415

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.
C.dubia are < 24 hrs old; *C.dubia* were harvested from tray 1031231 / 102918 XA2
 on 10/31/18 @ 16:45 to 11/1/18 @ 9:00.
C.dubia were last fed 11/1/18 @ 11:00.



CETIS Summary Report

Report Date: 05 Nov-18 11:13 (p 1 of 1)
 Test Code/ID: 110118RTCDA-A / 07-4447-8422

Ceriodaphnia 48-h Acute Survival Test						Pace National								
Batch ID: 13-0000-9885	Test Type: Survival (48h)	Analyst: Brandon Etheridge	Start Date: 01 Nov-18	Protocol: EPA-821/R-02-012 (2002)	Diluent: Mod-Hard Synthetic Water	Ending Date: 03 Nov-18	Species: Ceriodaphnia dubia	Brine:	Source: In-House Culture	Age: <24	Test Length: 48h	Taxon: Branchiopoda		
Sample ID: 18-8724-4939	Code: 707D1288	Project:	Sample Date: 01 Nov-18	Material: Potassium chloride	Source: Reference Toxicant	Receipt Date: 01 Nov-18	CAS (PC):	Station:			Sample Age: n/a	Client: Reference Toxicant		
Comments: <i>November</i> Reference Toxicant September 2018 48 hour C. dubia Acute "A" <i>BE 11-18</i>														
Point Estimate Summary														
Analysis ID	Endpoint	Point Estimate Method	✓ Level	gm/L	95% LCL	95% UCL	TU	S						
19-4553-4658	48h Survival Rate	Spearman-Kärber	LC50	0.6373	0.5673	0.7153		1						
Test Acceptability														
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision	TAC Limits						
13-4553-4658	48h Survival Rate	Control Resp	1	0.9	>>	Yes	Passes Criteria							
48h Survival Rate Summary														
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect			
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%			
0.0625		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%			
0.125		4	0.9500	0.7909	1.0000	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%			
0.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%			
0.5		4	0.9000	0.7163	1.0000	0.8000	1.0000	0.0577	0.1155	12.83%	10.00%			
1		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%			
48h Survival Rate Detail														
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4									
0	D	1.0000	1.0000	1.0000	1.0000									
0.0625		1.0000	1.0000	1.0000	1.0000									
0.125		1.0000	1.0000	1.0000	0.8000									
0.25		1.0000	1.0000	1.0000	1.0000									
0.5		1.0000	0.8000	1.0000	0.8000									
1		0.0000	0.0000	0.0000	0.0000									

November 2018 Reference Toxicant Test

Reference Toxicant November 2018

NPDES #: KCI

Test Date: November 6-13, 2018

Login #: Potassium Chloride

Tue 11/6/18

Initials	pH	Cond	DO	Time	Analyst
Control	8	258	8.7	15:15:08	MH
Dup Control	8	257.8	8.5	16:15:28	MH
0.05	7.9	362	8.3	16:16:05	MH
Dup 0.05	7.9	362	8.9	16:20:28	MH
0.1	8	475	8.9	16:16:59	MH
Dup 0.1	8	475	8.9	16:17:22	MH
0.2	8	655	8.9	16:17:51	MH
Dup 0.2	8	655	8.9	16:18:12	MH
0.4	8	1029	8.9	16:18:41	MH
Dup 0.4	8	1029	8.9	16:18:59	MH
0.8	8	1787	8.9	16:19:22	MH
Dup 0.8	8	1784	8.9	16:19:41	MH

Comments

Control #29

Wed 11/7/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.5	256	9.3	14:52:03	BB
0.05	8	372	9.7	14:52:44	BB
0.1	8	473	9.6	14:53:12	BB
0.2	8	664	9.7	14:54:03	BB
0.4	8	1044	9.7	14:54:39	BB
0.8	8	1784	9.8	14:55:13	BB

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8.1	8.3	17:25:06	BB
Dup Control	8.1	8.4	17:25:25	BB
0.05	8	8.1	17:25:47	BB
Dup 0.05	8	8.4	17:26:06	BB
0.1	8.1	8.5	17:26:35	BB
Dup 0.1	8.2	8.5	17:27:02	BB
0.2	8.2	8.5	17:27:36	BB
Dup 0.2	8.2	8.5	17:27:54	BB
0.4	8.1	8.6	17:28:15	BB
Dup 0.4	8.1	8.6	17:28:36	BB
0.8	8.2	8.6	17:29:12	BB
Dup 0.8	8.2	8.7	17:29:33	BB

Thu 11/8/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8	259.3	9.3	11:15:52	JB
0.05	8	353	9.2	11:16:38	JB
0.1	8.1	477	9.8	11:17:08	JB
0.2	8.1	662	10	11:17:39	JB
0.4	8	1041	10	11:18:13	JB
0.8	8	1782	10.3	11:18:47	JB

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8	8.7	15:44:55	JB
0.05	8	8.5	15:45:59	JB
0.1	8.1	8.4	15:46:39	JB
0.2	8.1	8.4	15:47:03	JB
0.4	8.1	8.4	15:48:01	JB
0.8	8	8.3	15:48:44	JB

Fri 11/9/18

Initials	pH	Cond	DO	Time	Analyst
Control	8	251	9.1	10:57:04	MIL
0.05	8	374	9.6	10:58:45	MIL
0.1	8	484	9.9	10:59:24	MIL
0.2	8.1	672	10.3	11:00:59	MIL
0.4	8	1057	10.3	11:01:21	MIL
0.8	7.9	1837	11	11:02:01	MIL

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8	8.3	17:20:50	
0.05	7.8	8.3	17:20:58	
0.1	7.9	8.6	17:21:14	0
0.2	7.9	8.6	17:21:22	0
0.4	7.9	8.5	17:21:37	0
0.8	7.9	8.5	17:22:09	0

November 2018
Reference Toxicant Test

Reference Toxicant November 2018

NPDES #: KCI
 Sat 11/10/18

Test Date: November 6-13, 2018
 Ceriodaphnia dubia (water flea)

Login #: Potassium Chloride

Initials	pH	Cond	DO	Time	Analyst
Control	8.1	241.5	9.2	10:19:24	BB
0.05	8	363	10	10:23:40	BB
0.1	8	477	10.2	10:24:16	BB
0.2	8	639	10.3	10:24:56	BB
0.4	8	1054	10.2	10:25:18	BB
0.8	7.8	1770	10.5	10:25:00	BB

Initials	pH	DO	Time	Analyst
Control	8	8.5	12:37:06	BB
0.05	7.9	8.4	12:37:26	BB
0.1	8	8.3	12:37:59	BB
0.2	8.1	8.3	12:38:35	BB
0.4	8	8.4	12:38:57	BB
0.8	8.1	8.5	12:39:30	BB

Sun 11/11/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.9	0.23	9.3	13:19:22	BB
0.05	7.9	372	9.7	13:20:10	BB
0.1	8	482	10.1	13:20:55	BB
0.2	7.9	597	10.3	13:21:18	BB
0.4	7.9	1043	10.4	13:21:47	BB
0.8	7.8	1818	10.8	13:22:16	BB

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8.1	8.7	17:35:58	CM
0.05	8.1	8.7	17:37:34	CM
0.1	8.1	8.8	17:38:03	CM
0.2	8.1	8.9	17:38:30	CM
0.4	8.1	8.8	17:39:01	CM
0.8	8.2	8.9	17:39:30	CM

Mon 11/12/18

Initials	pH	Cond	DO	Time	Analyst
Control	8.1	239.9	9.4	17:14:23	AME
0.05	8	365	10.6	17:15:07	AME
0.1	8	490	11.1	17:15:45	AME
0.2	8	675	11.2	17:16:21	AME
0.4	8	1074	11.2	17:16:50	AME
0.8	7.6		11.8	17:17:48	AME

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8.2	9	17:48:13	AME
0.05	8	8.3	17:49:34	AME
0.1	8.1	8.3	17:50:10	AME
0.2	8.2	8.3	17:50:42	AME
0.4	8.1	8.9	17:51:40	AME
0.8	8.2	8.9	17:52:09	AME

* Reading missed. Analyst error. BE 11/16/18

Tue 11/13/18

Initials	pH	Cond.	DO	Time	Analyst
Control					
0.05					
0.1					
0.2					
0.4					
0.8					

Ceriodaphnia dubia (water flea)

Initials	pH	DO	Time	Analyst
Control	8	8.5	16:58:43	AME
0.05	7.9	8.4	16:59:00	AME
0.1	8	8.3	16:59:31	AME
0.2	8	8.5	16:59:59	AME
0.4	8	8.5	17:00:26	AME
0.8	7.9	8.5	17:01:04	AME

Initials

	pH		Conductivity		DO	
	range	mean	range	mean	range	mean
Control	7.9-8.1	8.0	0.13-258	220	8.7-9.9	9.2
0.05	7.9-8	8.0	362-374	367	9.5-10.5	9.6
0.1	8-8.1	8.0	475-480	480	8.9-11.1	9.8
0.2	7.9-8.1	8.0	655-675	665	8.9-11.2	10.0
0.4	7.9-8	8.0	1029-1074	1047	8.9-11.2	10.0
0.8	7.6-8	7.9	1765-1837	1789	9.9-11.8	10.3

Finals

	Ceriodaphnia dubia (water flea)			
	pH		DO	
	range	mean	range	mean
Control	6.8-8.1	7.9	8.3-9	8.6
0.05	7.8-8.1	8.0	8.4-8.8	8.6
0.1	7.9-8.2	8.1	8.3-8.8	8.6
0.2	7.9-8.2	8.1	8.3-8.8	8.6
0.4	7.9-8.1	8.1	8.4-8.9	8.6
0.8	7.8-8.2	8.1	8.3-8.9	8.6

November 2018
 Reference Toxicant Test

Reference Toxicant November 2018

Ceriodaphnia dubia (water flea)

Toxicant Potassium Chloride Test Date: November 6-13, 2018 Lot of KCl Used: 110118KCl

Reference Toxicant Control SDW

L# of Control	Control Water Tank ID	Begin Use Date	Alkalinity	Hardness
L1042130-05	S 110518	11/6/2018	48	56
L1042130-06	F 110518	11/6/2018	61	72
*	Reference Toxicant (0.8% KCl)	11/6/2018	*	*

* Alkalinity and Hardness was not poured up. Analyst error. BE 11/16/18

Temperature Data (in degrees Celsius)

November 2018 Reference Toxicant Test

Temperature *Ceriodaphnia dubia* (measurement taken in test chambers)

	Tue 11/6/18	Wed 11/7/18	Thu 11/8/18	Fri 11/9/18	Sat 11/10/18	Sun 11/11/18	Mon 11/12/18	Tue 11/13/18
Analyst:	NY		NY		BE		MIL	
Control	24.8°C	24.6°C	24.0°C	24.6°C	24.5°C	24.8°C	25.6°C	24.4°C
0.05	25.2°C	24.5°C	24.0°C	24.5°C	24.5°C	24.9°C	26.0°C	24.3°C
0.1	25.6°C	24.9°C	24.0°C	24.5°C	24.6°C	24.9°C	24.9°C	24.4°C
0.2	25.7°C	24.8°C	24.0°C	24.8°C	24.8°C	24.8°C	25.8°C	24.3°C
0.4	25.5°C	24.7°C	24.2°C	24.9°C	25.2°C	24.8°C	26.0°C	24.3°C
0.8	25.5°C	24.8°C	25.1°C	24.8°C	25.7°C	24.9°C	26.0°C	24.3°C

Thermometer serial number:

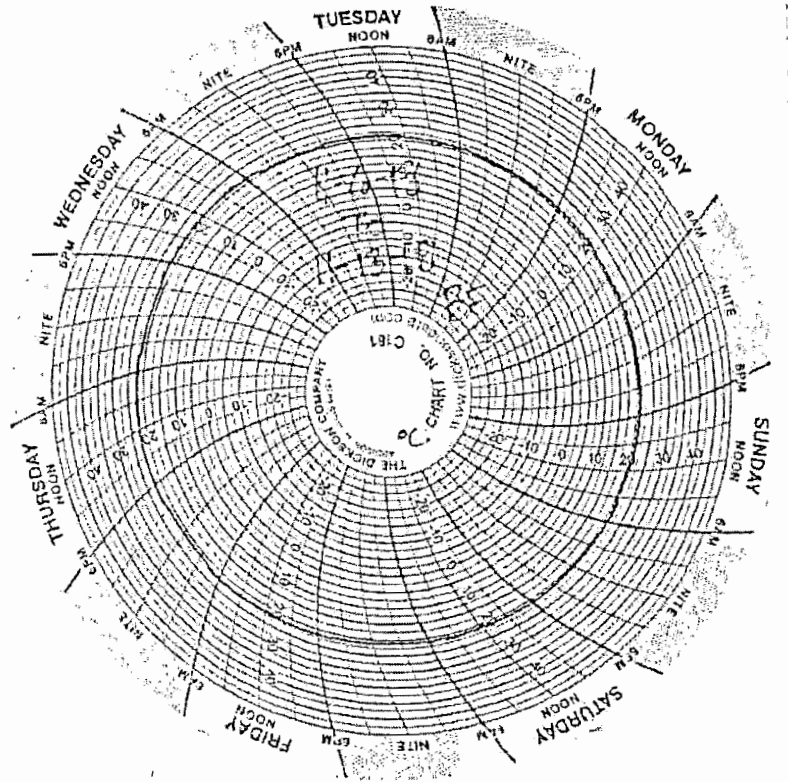
18050064

Reference Toxicant (C. dubia)

Chart Devices Used in
Thermo-Kool Walk-in Incubator

Dickson (small chart)

~~Thermo-Kool (large chart)~~

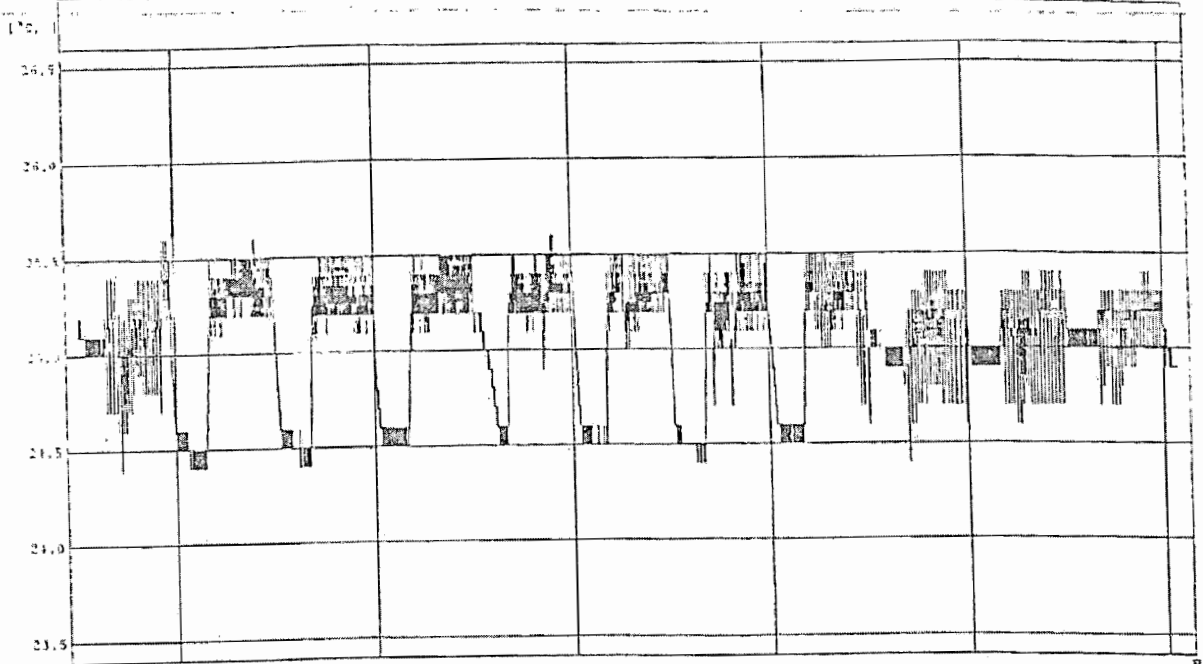


November 2018 Reference Toxicant Test

Week of 11-6-18 to 11-13-18 BE

Thermo Graph for Windows

11/13/2018 16:11:46



11/03/18 0:00:00	11/04/18 21:00:00	11/06/18 23:00:00	11/08/18 23:00:00	11/10/18 21:00:00	11/12/18 23:00:00
---------------------	----------------------	----------------------	----------------------	----------------------	----------------------

ch	Name	Intvl.	Sample	Cur.A	Cur.B	AC->B	High	Low	Avg.	Unit	
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C	
2	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C	
				Cur.A Date : 11/01/2018 21:20'52							
				Cur.B Date : 11/13/2018 5:23'09		Data Range 11/01/2018 21:20'52-11/13/2018 5:23'09					
				diff. A-B : 11 09:02'17.000		Calc.Range 11/02/2018 0:32'50-11/13/2018 2:11'11					

L #: Potassium Chloride

Date(s) and Time(s) of Neonate Harvest: From 17:18 on 11/5/2018 to 00:55 on 11/6/2018

Neonates were Harvested from the Following Tray(s):

Neonates were Harvested from the Following Cup(s):

110518XA2	110518XA2	110518XA2	110518XA2	110518XA2	110518XA2	110518XA2	110518XA2	110518XA2	110518XA2	110518XA2	Template Name:
B2	B3	C4	C7	D1	D7	E1	E6	F6	H4	Kingfisher	

Control Water Carboy Used

Description of Sample Being Analyzed Below:				CONTROL 29 Reference Toxicant November 2018											KCI		
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time	Analyst		A: 0	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0				
SF11-5	Tue 11/6/18	15:40	AME	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
SF11-5	Wed 11/7/18	15:16	MIL/JB	24 hrs	0	0	0.X	0	0	0	0	0	0	0	0	0	9
SF11-5	Thu 11/8/18	14:18	NY	48 hrs	0	0	0 -	0	0	0	0	0	0	0	0	0	9
SF11-5	Fri 11/9/18	15:54	SWS	72 hrs	0	0	-	0	0	0	0	7	0	0	0	7	9
SF11-5	Sat 11/10/18	10:50	KR	96 hrs	5	5	-	4	5	3	5	0	5	6	38	9	
SF11-5	Sun 11/11/18	15:56	CM	120 hrs	9	12	-	11	10	8	9	10	9	10	88	9	
SF11-5	Mon 11/12/18	16:29	CGM	144 hrs	0	0	-	17	0	0	0	22	0	12	51	9	
	Tue 11/13/18	15:30	CGM	168 hrs	18	14	-	0	13	9	9	0	17	0	80	9	
	Wed 11/14/18			192 hrs			-								0		
Total # of Young Produced:					32	31	0	32	28	20	23	39	31	28	Total Offspring at Renewal	Total Young Produced	
C. dubia Cup Batch/Lot: 5000T84415															264	264	

Test Acceptability Criteria:	Survival ≥ 80%? YES NO X	≥ 15 neonates/female? YES NO X	≥ 80% 3rd brood? YES NO X	Is repro CV < 40%? YES NO X	Control Valid? YES NO X
------------------------------	--------------------------------	--------------------------------------	---------------------------------	-----------------------------------	-------------------------------

Description of Sample Being Analyzed Below:				0.05 Reference Toxicant November 2018											KCI	
Set-up & Transfer Data				Identification of Replicate											# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 0	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0			
	Tue 11/6/18	15:40	AME	initiation	0	0	0	0	0	0	0	0	0	0	0	10
	Wed 11/7/18	15:20	MIL/JB	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Thu 11/8/18	14:20	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10
	Fri 11/9/18	15:57	SWS	72 hrs	0	0	0	0	0	0	0	4	0	0	4	10
	Sat 11/10/18	10:52	KR	96 hrs	8	4	6	5	6	0	3	0	4	6	42	10
	Sun 11/11/18	16:01	CM	120 hrs	9	11	8	9	9	8	9	12	10	9	94	10
	Mon 11/12/18	16:35	CGM	144 hrs	0	0	0	11	14	0	0	17	11	14	67	10
	Tue 11/13/18	15:33	CGM	168 hrs	15	17	8	0	0	12	18	0	0	0	70	10
	Wed 11/14/18			192 hrs											0	
Total # of Young Produced:					32	32	22	25	29	20	30	33	25	29	Total Offspring at Renewal	Total Young Produced
Comments:															277	277

November 2018 Reference Toxicant Test

L #: Potassium Chloride

Description of Sample Being Analyzed Below:				0.1 Reference Toxicant November 2018										KCI		
Set-up & Transfer Data				Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time	Analyst		A: 0	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0			
Tue 11/6/18	15:40	AME	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Wed 11/7/18	15:24	MIL/JB	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Thu 11/8/18	14:22	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Fri 11/9/18	16:01	SWS	72 hrs	0	0	0	0	0	0	0	4	0	0	4	10	
Sat 11/10/18	10:54	KR	96 hrs	5	5	[7]	4	6	4	4	0 X	8	5	41	9	
Sun 11/11/18	16:04	CM	120 hrs	8	8	[8]	9	12	9	9	-	9	9	73	9	
Mon 11/12/18	16:39	CGM	144 hrs	13	0	NT	0	13	0	0	-	15	12	53	8 (1 NT)	
Tue 11/13/18	15:38	CGM	168 hrs	0	19	-	12	0	15	17	-	0	0	63	8 (1 NT)	
Wed 11/14/18			192 hrs			-					-			0		
Total # of Young Produced:				26	32	0	25	31	28	30	4	32	26	Total Offspring at Renewal	Total Young Produced	
														234	234	

Description of Sample Being Analyzed Below:				0.2 Reference Toxicant November 2018										KCI	
Set-up & Transfer Data				Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal
Date	Time	Analyst		A: 0	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0		
Tue 11/6/18	15:40	AME	initiation	0	0	0	0	0	0	0	0	0	0	0	10
Wed 11/7/18	15:28	MIL/JB	24 hrs	0	0	0	0	0	0	0	0	0	0	0	10
Thu 11/8/18	14:24	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	10
Fri 11/9/18	16:04	SWS	72 hrs	0	0	0	0	0	0	0	4	0	0	4	10
Sat 11/10/18	10:56	KR	96 hrs	7	4	6	6	4	6	5	0	6	4	48	10
Sun 11/11/18	16:07	CM	120 hrs	9	7	9	9	8	8	9	8	13	13	93	10
Mon 11/12/18	16:46	CGM	144 hrs	0	0	13	13	0	0	0	15	13	14	68	10
Tue 11/13/18	15:46	CGM	168 hrs	13	12	0	0	14	15	16	[13] *	0	0	70	10
Wed 11/14/18			192 hrs											0	
Total # of Young Produced:				29	23	28	28	26	29	30	27	32	31	Total Offspring at Renewal	Total Young Produced
														283	283

*X" = indicates dead daphnid; death is confirmed by observation (no appendage movement and no visible heartbeat)

Comments:

* Fourth brood observed. Not included in calculations- CGM 11-14-18

November 2018
Reference Toxicant Test

L#: Potassium Chloride

Description of Sample Being Analyzed Below:				0.4 Reference Toxicant November 2018										KCI		
Set-up & Transfer Data		Analyst	Initiation	Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time			A: 0	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0			
Tue 11/6/18	15:40	AME	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Wed 11/7/18	15:34	MIL/JB	24 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Thu 11/8/18	14:28	NY	48 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Fri 11/9/18	16:09	SWS	72 hrs	0	0	0	0	0	0	0	0	0	0	0	0	10
Sat 11/10/18	10:58	KR	96 hrs	6	0	0	1	4	2	2	0	5	3	23	10	
Sun 11/11/18	16:12	CM	120 hrs	14	0	0	5	9	4	7	8	5	4	56	10	
Mon 11/12/18	16:50	CGM	144 hrs	0	0	0	5	0	0	0	11	8	12	36	10	
Tue 11/13/18	15:50	CGM	168 hrs	15	11	0 X	0	14	8	8	0	0	0	56	9	
Wed 11/14/18			192 hrs			-								0		
Total # of Young Produced:				35	11	0	11	27	14	17	19	18	19	Total Offspring at Renewal	Total Young Produced	
														171	171	

Description of Sample Being Analyzed Below:				0.8 Reference Toxicant November 2018										KCI		
Set-up & Transfer Data		Analyst	Initiation	Identification of Replicate										# of Offspring at Renewal	# of Live Adults at Renewal	
Date	Time			A: 0	B: 0	C: 0	D: 0	E: 0	F: 0	G: 0	H: 0	I: 0	J: 0			
Tue 11/6/18	15:40	AME	initiation	0	0	0	0	0	0	0	0	0	0	0	0	10
Wed 11/7/18	15:40	MIL/JB	24 hrs	0	0 X	0 X	0 X	0 X	0 X	0 X	0	0	0	0	0	4
Thu 11/8/18	14:30		48 hrs	0	0 -	0 -	0 -	0 -	0 -	0 -	0 X	0	0	0	0	3
Fri 11/9/18	16:12	SWS	72 hrs	0	-	-	-	-	-	-	-	0	0 X	0	0	2
Sat 11/10/18	11:00	KR	96 hrs	0	-	-	-	-	-	-	-	0	-	0	0	2
Sun 11/11/18	16:16	CM	120 hrs	3	-	-	-	-	-	-	-	0	-	3	2	
Mon 11/12/18	16:53	CGM	144 hrs	0	-	-	-	-	-	-	-	4	-	4	2	
Tue 11/13/18	15:53	CGM	168 hrs	0 X	-	-	-	-	-	-	-	0 X	-	0	0	
Wed 11/14/18			192 hrs	-	-	-	-	-	-	-	-	-	-	0		
Total # of Young Produced:				3	0	0	0	0	0	0	0	0	4	0	Total Offspring at Renewal	Total Young Produced
															7	7

"X" = Indicates dead daphnid; death is confirmed by observation (no appendage movement and no visible heartbeat)

Comments:

November 2018

Reference Toxicant Test

CETIS Summary Report

Report Date: 14 Nov-18 13:22 (p 1 of 2)
 Test Code/ID: RTCD110618 / 06-8574-4896

Ceriodaphnia 7-d Survival and Reproduction Test			Pace National		
Batch ID: 16-7565-1151	Test Type: Reproduction-Survival (7d)	Analyst: Clarissa Moore			
Start Date: 06 Nov-18 08:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water			
Ending Date: 12 Nov-18	Species: Ceriodaphnia dubia	Brine:			
Test Length: 5d 16h	Taxon: Branchiopoda	Source: In-House Culture	Age: <24		
Sample ID: 01-9398-8375	Code: B900717	Project:			
Sample Date: 05 Nov-18	Material: Potassium chloride	Source: NPDES Permit # (XX99999999)			
Receipt Date: 06 Nov-18	CAS (PC):	Station:			
Sample Age: 32h	Client: Reference Toxicant				

Comments:
 Reference Toxicant (November 2018) C. dubia

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD S
04-8371-5671	Reproduction	Dunnnett Multiple Comparison Test	0.2	0.4	0.2828		27.6% 1

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	✓ Level	gm/L	95% LCL	95% UCL	TU S
11-3964-3390	7d Survival Rate	Linear Interpolation (ICPIN)	LC5	0.3887	0.06898	0.42	1
			LC10	0.42	0.08797	0.44	
			LC15	0.4411	0.278	0.46	
			LC20	0.4622	0.3182	0.48	
			LC25	0.4833	0.3667	0.5	
			LC40	0.5467	0.4571	0.56	
03-8877-7049	Reproduction	Linear Interpolation (ICPIN)	✓ IC5	0.2271	0.01914	0.2534	1
			✓ IC10	0.2542	0.03829	0.3109	
			✓ IC15	0.2813	0.07561	0.3745	
			✓ IC20	0.3084	0.2189	0.4147	
			✓ IC25	0.3355	0.2515	0.4401	
			✓ IC40	0.4205	0.3256	0.5146	
✓ IC50	0.4866	0.3677	0.5639				

November 2018 Reference Toxicant Test

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
11-3964-3390	7d Survival Rate	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
03-8877-7049	Reproduction	Control Resp	26.4	15	>>	Yes	Passes Criteria
04-8371-5671	Reproduction	Control Resp	26.4	15	>>	Yes	Passes Criteria
04-8371-5671	Reproduction	PMSD	0.2763	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
0.05		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
0.1		9	0.8889	0.6327	1.0000	0.0000	1.0000	0.1111	0.3333	37.50%	1.23%
0.2		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%
0.4		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	0.00%
0.8		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Reproduction Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	26.4	18.79	34.01	0	39	3.364	10.64	40.29%	0.00%
0.05		10	27.7	24.5	30.9	20	33	1.415	4.473	16.15%	-4.92%
0.1		9	26	19.33	32.67	4	32	2.892	8.675	33.36%	1.52%
0.2		10	28.3	26.45	30.15	23	32	0.8172	2.584	9.13%	-7.20%
0.4		10	17.1	10.34	23.86	0	35	2.987	9.445	55.23%	35.23%
0.8		10	0.7	-0.3691	1.769	0	4	0.4726	1.494	213.49%	97.35%

CETIS Summary Report

Report Date: 14 Nov-18 13:22 (p 2 of 2)
 Test Code/ID: RTCD110618 / 06-8574-4896

Ceriodaphnia 7-d Survival and Reproduction Test											Pace National
7d Survival Rate Detail											
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.05		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.1		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	
0.2		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.4		1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.8		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Reproduction Detail											
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	32	31	0	32	28	20	23	39	31	28
0.05		32	32	22	25	29	20	30	33	25	29
0.1		28	32	25	31	29	30	4	32	26	
0.2		29	23	28	28	26	29	30	27	32	31
0.4		35	11	0	11	27	14	17	19	18	19
0.8		3	0	0	0	0	0	0	0	4	0

November 2018 Reference Toxicant Test



Datasheet printed by: BE

Control Water (Tank ID): Σ103118

Control Water (Begin Use Date): 11-1-18

Pimephales promelas 48-hr Acute Reference Toxicant Test "B"

Month of: September 2018

Test Start Date: 11-1-18

Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050064

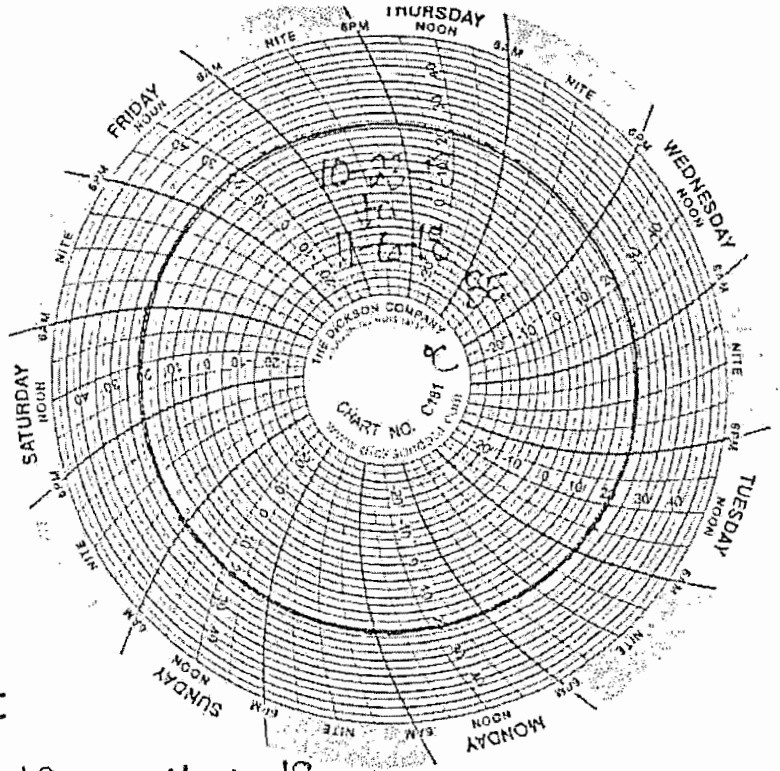
Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius. *Readings missed Analyst Error 11-3-18*

Toxicant (g/L)		Analyst: <u>ML</u>	Analyst: <u>ER</u>	Analyst: <u>MLH</u>	Analyst: <u>MLH</u>
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	<i>Pimephales promelas</i>	24.3 °C	24.9 °C	24.9 °C	24.9 °C
0.3	<i>Pimephales promelas</i>	24.4 °C		24.9 °C	24.9 °C
0.6	<i>Pimephales promelas</i>	24.5 °C		25.0 °C	25.0 °C
1.2	<i>Pimephales promelas</i>	24.5 °C			
2.4	<i>Pimephales promelas</i>	24.6 °C			
4.8	<i>Pimephales promelas</i>	24.6 °C		24.9 °C	24.9 °C

November 2018 Reference Toxicant Test

Sample ID: *Pimephales promelas 48-hr Acute Reference Toxicant Test "B"*

Chart Devices Used in
Thermo-Kool Walk-in Incubator
Dickson (small chart)
~~Thermo-Kool (large chart)~~



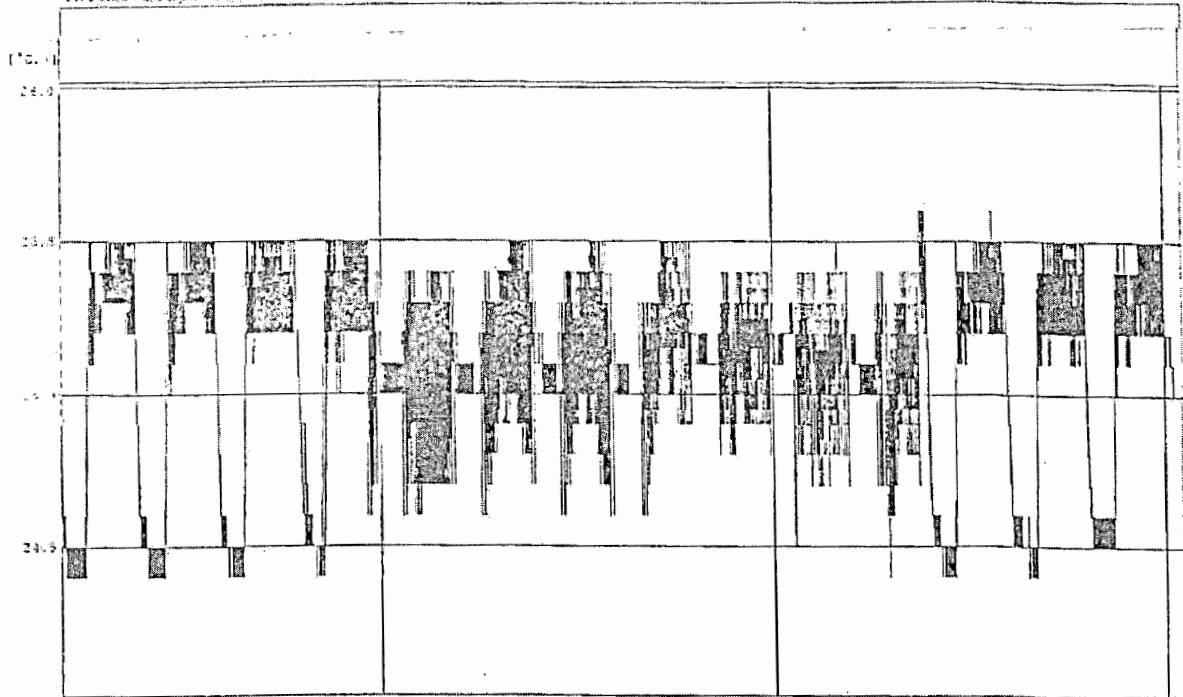
November 2018 Reference Toxicant Test

Two Weeks From 10-23-18 to 11-6-18

BE

Thermo Graph For Windows

11/06/2018 15:48'25



ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	----	----	----	25.6	24.4	25.1	°C
2	Ch2	2min.	8000	----	----	----	25.6	24.4	25.1	°C
3	Ch1	2min.	8000	----	----	----	25.6	24.4	25.1	°C
4	Ch2	2min.	8000	----	----	----	25.6	24.4	25.1	°C

Cur.A Date : 10/22/2018 22:55'32
 Cur.B Date : 11/06/2018 4:34'12
 diff. A-B : 14 06:38'40.000

Data Range 10/22/2018 22:55'32-11/06/2018 4:34'12
 Calc.Range 10/18/2018 22:36'50-11/06/2018 2:15'11

ACUTE TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow)

Client **Minnow 48-hr Acute Reference Toxicant Test "B"** Toxicant Used: potassium chloride
 Begin 11-1-18 Time 15:19 *end test +/- 1 hr from start
 End 11-3-18 Time 15:14 time
 Test Duration: 48 hours
 Dilution Water: Moderately Hard SDW
 Month of: **September 2018**

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE Minnows		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	10	10	10
	B: 2	10	10	10
0.3	A: 2	10	10	10
	B: 6	10	10	10
0.6	A: 3	10	10	10
	B: 1	10	9	9
1.2	A: 4	10	0	-
	B: 5	10	0	-
2.4	A: 5	10	0	-
	B: 4	10	0	-
4.8	A: 6	10	0	-
	B: 3	10	0	-
Checked By: <u>CM / BC</u>	Biologist: <u>HLL</u>	<u>15:19</u>	<u>15:32</u>	<u>15:14</u>

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
initial 7.6	7.9	initial 8.5	7.8
initial 7.9	7.8	initial 8.4	7.90
initial 7.9	<u>7.8</u> 7.9	initial 8.4	<u>8.00</u> 8.00
initial 7.7	7.7 ^Δ	initial 8.3	8.1 ^Δ
initial 7.9	7.7 ^Δ	initial 8.3	7.7 ^Δ
initial 7.8	7.7 ^Δ	initial 8.1	7.6 ^Δ
Initial Readings By: <u>NY</u>	<u>14:40</u>	AP Readings Taken <u>11-2-18 10:00 AM</u>	Final Readings By: <u>:</u>

November 2018 Reference Toxicant Test

Conductivity (umhos/cm)	
0 hrs	final
initial 278.1	264.9
initial 939	957
initial 1310	<u>1335</u> 1335
initial 2264	2349 ^Δ
initial 4756	4840 ^Δ
initial 8500	8790 ^Δ

0.1M 11/1/18

Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL < 0.2	40	58
4.8 Concentration < 0.2	50	59

Lot # of KCl Stock Solution:
110118KCL

Fish Cup Batch/Lot: AUG 018423

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.

Minnows were 3 days old at test initiation and were taken from ESC Lot # 102918HD

Minnows were last fed 11/1/18 @ 11:00.



CETIS Summary Report

Report Date: 07 Nov-18 11:53 (p 1 of 1)
 Test Code/ID: RTPP110118(B) / 19-8791-2718

Fathead Minnow 48-h Acute Survival Test Paca National

Batch ID: 10-5918-4261	Test Type: Survival (48h)	Analyst: Clarissa Moore
Start Date: 01 Nov-18	Protocol: EPA/821/R-02-012 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 03 Nov-18	Species: Pimephales promelas	Brine:
Test Length: 48h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <36

Sample ID: 11-1854-9370	Code: 42ABB57A	Project:
Sample Date: 31 Oct-18	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)
Receipt Date: 01 Nov-18	CAS (PC):	Station:
Sample Age: 24h	Client: YCT Use Test	

Comments:
 YCT Use Test (November 2018) P. promelas B

Point Estimate Summary									
Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S	
00-4616-8350	48h Survival Rate	Spearman-Kärber	LC50	0.8196	0.7661	0.8769	122	1	

48h Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	2	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.3		2	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.6		2	0.9500	0.3147	1.0000	0.9000	1.0000	0.0500	0.0707	7.44%	5.00%
1.2		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
2.4		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
4.8		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

48h Survival Rate Detail			
Conc-%	Code	Rep 1	Rep 2
0	D	1.0000	1.0000
0.3		1.0000	1.0000
0.6		1.0000	0.9000
1.2		0.0000	0.0000
2.4		0.0000	0.0000
4.8		0.0000	0.0000

48h Survival Rate Binomials			
Conc-%	Code	Rep 1	Rep 2
0	D	10/10	10/10
0.3		10/10	10/10
0.6		10/10	9/10
1.2		0/10	0/10
2.4		0/10	0/10
4.8		0/10	0/10

November 2018 Reference Toxicant Test



Datasheet printed by: BE

Control Water (Tank ID): S-103118

Control Water (Begin Use Date): 11-18

Pimephales promelas 48-hr Acute Reference Toxicant Test "A"

Month of: September 2018

Test Start Date: 11-1-18

Toxicant: potassium chloride (KCl)

Thermometer Serial #: 18050064

Measurements taken directly in test chamber. Temperatures recorded in degrees Celsius.

Toxicant (g/L)		Analyst: <u>MY</u>	Analyst: <u>MY</u>	Analyst: <u>MT</u>	Analyst: <u>MT</u>
		0 hrs	24 hrs (initial)	24 hrs (final)	48 hrs (final)
CONTROL	<i>Pimephales promelas</i>	24.8 °C	25.1 °C	25.1 °C	25.1 °C
0.3	<i>Pimephales promelas</i>	24.8 °C	25.1 °C	25.0 °C	25.0 °C
0.6	<i>Pimephales promelas</i>	25.2 °C	25.1 °C	25.0 °C	25.0 °C
1.2	<i>Pimephales promelas</i>	25.2 °C	25.0 °C	25.0 °C	25.0 °C
2.4	<i>Pimephales promelas</i>	25.4 °C	25.0 °C	— °C	— °C
4.8	<i>Pimephales promelas</i>	25.4 °C	25.1 °C	— °C	— °C

① MT 11-3-18
Readings missed
Analyst 8110V

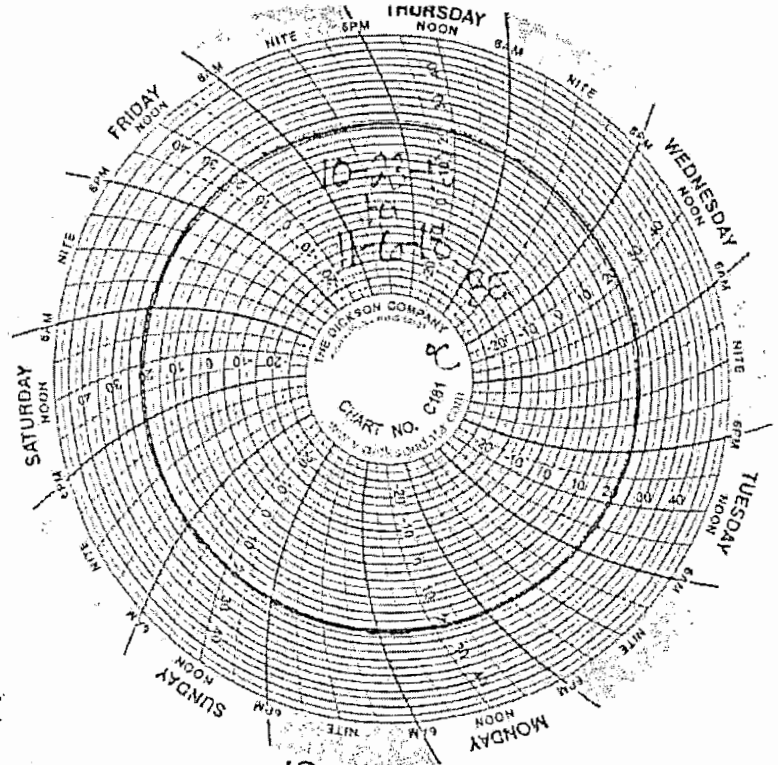
November 2018 Reference Toxicant Test

Sample ID: *Pimephales promelas* 48-hr Acute Reference Toxicant Test "A"

Chart Devices Used in
Thermo-Kool Walk-in Incubator

Dickson (small chart)

~~Thermo-Kool (large chart)~~



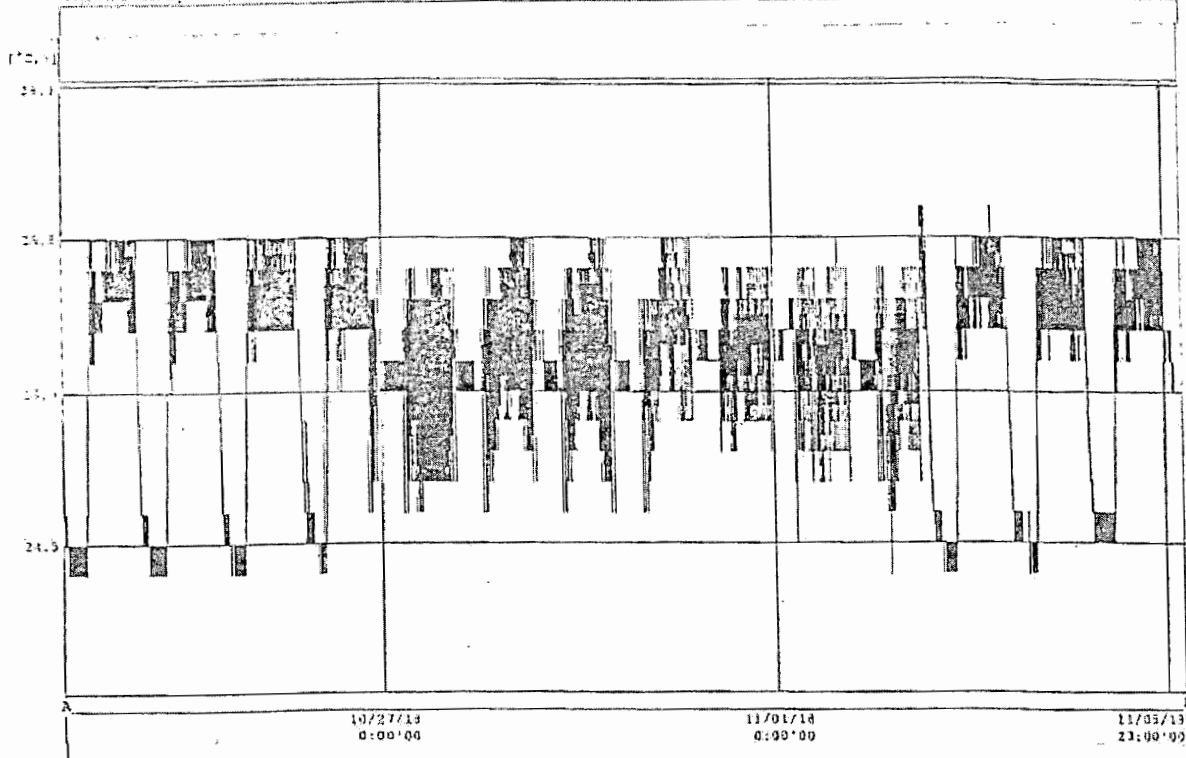
November 2018 Reference Toxicant Test

Two Weeks From 10-23-18 to 11-6-18

BE

Thermo Graph for Windows

11/06/2018 15:45:25



ch	Name	Intvl.	Sample	Cur. A	Cur. B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
2	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
3	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
4	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C

Cur. A Date : 10/22/2018 22:55:32
 Cur. B Date : 11/06/2018 4:34:12
 diff. A-B : 14 06:39:49.000

Data Range 10/22/2018 22:55:32-11/06/2018 4:34:12
 Calc. Range 10/18/2018 22:36:50-11/06/2018 2:15:11

ACUTE TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow)

Violet

Client **Minnow 48-hr Acute Reference Toxicant Test "A"** Toxicant Used: potassium chloride

Month of: **September 2018**

Begin 11-1-18
End 11-3-18

Time 15:09 *end test +/- 1 hr from start time
Time 15:03

Test Duration: 48 hours
Dilution Water: Moderately Hard SDW

48-hr Acute Reference Toxicant Test

Effluent in Percent (%)	Replicate Position	# OF LIVE Minnows		
		0 hrs	24 hrs	48 hrs
CONTROL	A: 1	10	10	10
	B: 5	10	10	10
0.3	A: 2	10	10	10
	B: 4	10	10	9
0.6	A: 3	10	89	8
	B: 6	10	89	9
1.2	A: 4	10	0	0
	B: 1	10	1	0
2.4	A: 5	10	0	—
	B: 2	10	0	—
4.8	A: 6	10	0	—
	B: 3	10	0	—
Checked By: <u>NM/BE</u>	Biologist: <u>MS/AM/ML/BE/MLA</u>	Time: <u>15:09</u>	<u>09:57</u>	<u>15:03</u>

pH (std. units)		Dissolved Oxygen (mg/L)	
0 hrs	final	0 hrs	final
initial 7.6	7.9	initial 8.5	8.0
initial 7.4	7.8	initial 8.4	7.9
initial 7.9	7.8	initial 8.4	7.9
initial 7.7	7.7 7.8	initial 8.3	7.9 7.9
initial 7.9	7.6 ^Δ	initial 8.3	7.9 ^Δ
initial 7.8	7.6 ^Δ	initial 8.1	7.6 ^Δ
Initial Readings By: <u>NY</u>	<u>14:40</u>	^Δ Readings Taken <u>11-1-18 10:13 AM</u>	Final Readings By: <u>BE</u> <u>15:14</u>

November 2018

Reference Toxicant Test

Conductivity (umhos/cm)	
0 hrs	final
initial 278.1	265
initial 939	902
initial 1310	1328
initial 2269	2314 2315
initial 4750	4790 ^Δ
initial 8520	8640 ^Δ

	Total Cl2 (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)
CONTROL	< 0.2	40	58
4.8 Concentration	< 0.2	50	55

L 1039787-03
L 1040280-01

Lot # of KCl Stock Solution:
110118KCL

Fish Cup Batch/Lot: A1A61718UR3

Data divided by a slash mark (/) indicates that a duplicate was run on that parameter.

Minnows were 3 days old at test initiation and were taken from ESC Lot # 102918HD

Minnows were last fed 11/1/18 @ 11:00.



CETIS Summary Report

Report Date: 07 Nov-18 11:48 (p 1 of 1)
 Test Code/ID: RTPP110118(A) / 20-8934-9409

Fathead Minnow 48-h Acute Survival Test										Pace National	
Batch ID: 10-5918-4261	Test Type: Survival (48h)	Analyst: Clarissa Moore									
Start Date: 01 Nov-18	Protocol: EPA/821/R-02-012 (2002)	Diluent: Mod-Hard Synthetic Water									
Ending Date: 03 Nov-18	Species: Pimephales promelas	Brine:									
Test Length: 48h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO	Age: <36								
Sample ID: 15-0361-2416	Code: 599F4E00	Project:									
Sample Date: 31 Oct-18	Material: POTW Effluent	Source: NPDES Permit # (XX99999999)									
Receipt Date: 01 Nov-18	CAS (PC):	Station:									
Sample Age: 24h	Client: YCT Use Test										
Comments:											
YCT Use Test (November 2018) P. promelas											
Point Estimate Summary											
Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S		
02-5907-3133	48h Survival Rate	Trimmed Spearman-Kärber		LC50	0.7715	0.6786	0.8772	129.6	1		
48h Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	2	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.3		2	0.9500	0.3147	1.0000	0.9000	1.0000	0.0500	0.0707	7.44%	5.00%
0.6		2	0.8500	0.2147	1.0000	0.8000	0.9000	0.0500	0.0707	8.32%	15.00%
1.2		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
2.4		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
4.8		2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
48h Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2								
0	D	1.0000	1.0000								
0.3		1.0000	0.9000								
0.6		0.8000	0.9000								
1.2		0.0000	0.0000								
2.4		0.0000	0.0000								
4.8		0.0000	0.0000								
48h Survival Rate Binomials											
Conc-%	Code	Rep 1	Rep 2								
0	D	10/10	10/10								
0.3		10/10	9/10								
0.6		8/10	9/10								
1.2		0/10	0/10								
2.4		0/10	0/10								
4.8		0/10	0/10								

November 2018 Reference Toxicant Test

Reference Toxicant November 2018

NPDES #: KCI

Date: November 6-13, 2018

Login #: Potassium Chloride

Tue 11/6/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.3	253.3	8.5	14:20:53	MH
Dup. Control	7.2	254.4	8.7	14:21:16	MH
0.1875	7.9	597	8.3	14:21:56	MH
Dup. 0.1875	7.8	597	8.3	14:22:14	MH
0.375	7.9	943	8.9	14:22:38	MH
Dup. 0.375	7.8	965	8.9	14:23:07	MH
0.75	7.8	1602	8.9	14:23:38	MH
Dup. 0.75	7.8	1603	8.9	14:24:02	MH
1.5	7.3	2917	8.9	14:24:29	MH
Dup. 1.5	7.3	2918	8.9	14:25:08	MH
3	7.3	5410	8.8	14:25:41	MH
Dup. 3	7.3	5390	8.9	14:25:59	MH

Comments

Control #30

Wed 11/7/18

Initials	pH	Cond.	DO	Time	Analyst
Control	7.3	256.5	9.7	14:56:23	BB
0.1875	7.3	559	9.7	14:57:13	BB
0.375	7.3	959	9.8	14:57:50	BB
0.75	7.3	1447	9.8	14:58:31	BB
1.5	7.3	2972	9.8	14:59:09	BB
3	7.7	5170	9.8	15:00:36	BB

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.7	8.6	9:32:23	BB
Dup. Control	7.8	8.3	9:32:51	BB
0.1875	7.8	8.7	9:33:40	BB
Dup. 0.1875	7.8	8.1	9:34:17	BB
0.375	7.6	8.1	9:34:46	BB
Dup. 0.375	7.5	8.1	9:35:21	BB
0.75	7.7	8.1	9:35:54	BB
Dup. 0.75	7.5	8	9:36:17	BB
1.5	7.7	8	9:36:53	BB
Dup. 1.5	7.6	8	9:37:33	BB
3	7.7	8	9:38:15	BB
Dup. 3	7.7	8	9:38:35	BB

Thu 11/8/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8.1	258.5	9.7	11:20:12	JB
0.1875	7.8	539	9.7	11:20:38	JB
0.375	7.8	945	10	11:21:19	JB
0.75	7.8	1642	10.1	11:21:59	JB
1.5					JB
3					JB

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.8	8.4	9:45:07	JB
0.1875	7.8	8.3	9:45:50	JB
0.375	7.7	8.1	9:46:11	JB
0.75	7.8	8.1	9:46:43	JB
1.5				JB
3				JB

Fri 11/9/18

Initials	pH	Cond.	DO	Time	Analyst
Control	8	262.8	10.1	11:02:46	MIL
0.1875	7.7	616	10.2	11:03:09	MIL
0.375	7.8	972	10.3	11:03:52	MIL
0.75	7.7	1691	10.5	11:04:18	MIL
1.5					MIL
3					MIL

Pimephales promelas (fathead minnow)

Initials	pH	DO	Time	Analyst
Control	7.8	8.3	9:40:13	MIL
0.1875	7.8	8.1	9:41:34	MIL
0.375	7.8	8.1	9:42:27	MIL
0.75	7.7	8	9:43:11	MIL
1.5				MIL
3				MIL

November 2018 Reference Toxicant Test

Reference Toxicant November 2018

NPOES #: KCI
 Sat 11/10/18

Date: November 6-13, 2018

Login #: Potassium Chloride

Initials

	pH	Cond	DO	Time	Analyst
Control	8.1	373.1	10.8	10:27:26	BB
0.1875	8.1	838	10.7	10:28:23	BB
0.375	8.1	925	11.1	10:28:49	BB
0.75	8.1	1438	11.3	10:29:28	BB
1.5					BB
3					BB

Finals
Pimephales promelas (fathead minnow)

	pH	DO	Time	Analyst
Control	7.7	8	9:10:15	BB
0.1875	7.7	7.9	9:11:01	BB
0.375	7.7	7.9	9:11:35	BB
0.75	7.7	7.9	9:12:14	BB
1.5				BB
3				BB

Sun 11/11/18

Initials

	pH	Cond	DO	Time	Analyst
Control	7.9	306	10.5	13:25:39	BB
0.1875	8	539	10.5	13:26:39	BB
0.375	8	897	10.4	13:27:21	BB
0.75	8.2	1643	10.5	13:27:55	BB
1.5					BB
3					BB

Finals
Pimephales promelas (fathead minnow)

	pH	DO	Time	Analyst
Control	8	9.1	13:10:13	NY
0.1875	8	8.1	13:16:17	NY
0.375	8	9	13:17:06	NY
0.75	7.5	9	13:17:29	NY
1.5				NY
3				NY

Mon 11/12/18

Initials

	pH	Cond	DO	Time	Analyst
Control	8	252.1	9	11:12:20	AME
0.1875	8	417	9.3	11:15:41	AME
0.375	8	882	9.7	11:16:13	AME
0.75	8.2	1620	9.9	11:16:45	AME
1.5					AME
3					AME

Finals
Pimephales promelas (fathead minnow)

	pH	DO	Time	Analyst
Control	7.9	8.5	11:03:59	AME
0.1875	7.8	8.5	11:09:38	AME
0.375	8	8.4	11:10:07	AME
0.75	7.9	8.4	11:10:30	AME
1.5				AME
3				AME

Tue 11/13/18

Finals
Pimephales promelas (fathead minnow)

	pH	DO	Time	Analyst
Control	7.8	8.4	10:46:52	AME
0.1875	7.9	8.2	10:49:52	AME
0.375	7.9	8.2	10:51:19	AME
0.75	7.9	8.3	10:52:27	AME
1.5				AME
3				AME

Initials

	pH		Conductivity		DO	
	range	mean	range	mean	range	mean
Control	7.8-8.1	8.0	53.3-306	765	8.9-10.4	9.7
0.1875	7.7-8.1	7.9	626-839	612	8.4-10.7	9.7
0.375	7.8-8.1	7.9	947-897	969	8.3-11.1	9.9
0.75	7.7-8.2	7.9	1666-1691	1635	8.0-11.3	10.0
1.5	7.8-7.8	7.8	2917-2942	2926	8.0-9.8	9.2
3	7.7-7.8	7.8	5350-5470	5423	8.8-9.8	9.2

Finals

Pimephales promelas (fathead minnow)

	pH		DO	
	range	mean	range	mean
Control	7.7-8	7.8	8-9.1	8.5
0.1875	7.7-8	7.8	7.9-9.1	8.3
0.375	7.7-8	7.9	7.9-9	8.2
0.75	7.7-7.9	7.8	7.9-9	8.2
1.5	7.7-7.8	7.8	8-9	8.0
3	7.7-7.7	7.7	8-8	8.0

November 2018 Reference Toxicant Test

***Pimephales promelas* (fathead minnow)**
Reference Toxicant November 2018

Toxicant: potassium chloride (KCl) Test Date: November 6-13, 2018

Reference Toxicant Control

L# of Control	Control Water Tank ID	Begin Use Date	Alkalinity (mg/L)	Hardness (mg/L)
L1042130-05	S 110518	Tue 11/6/18	48	56
L1042130-06	F 110518	Tue 11/6/18	61	72

Reference Toxicant (KCl Stock Solution)	Begin Use Date	Alkalinity (mg/L)	Hardness (mg/L)	L# of 3% KCl
	Tue 11/6/18			

Lot # of KCl Stock Solution used: 110118KCl * Alkalinity and Hardness not poured up. Analyst error. BE 11/16/18



Temperature *Pimephales promelas* (measurement taken in test chambers)

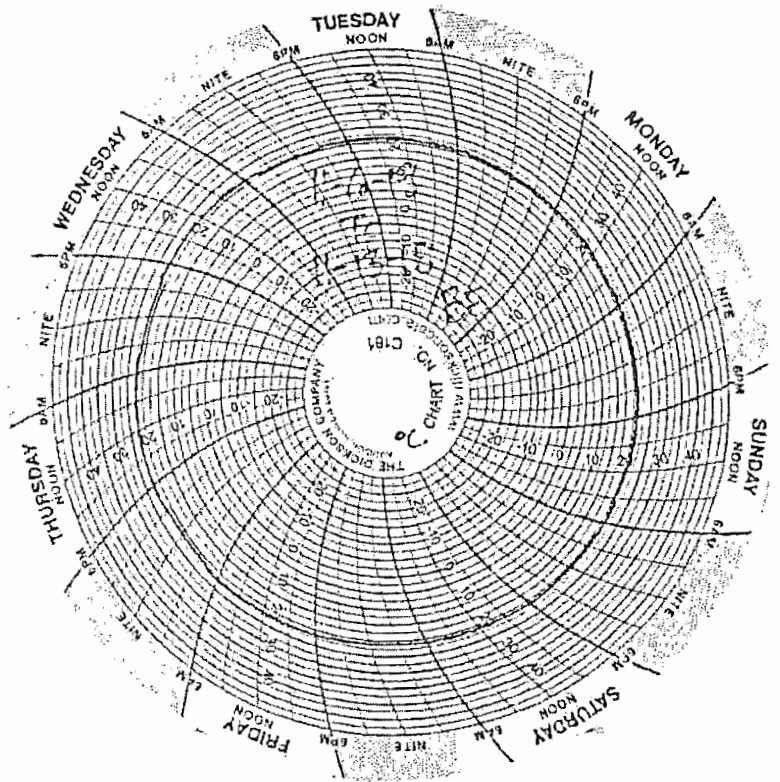
	Tue 11/6/18	Wed 11/7/18	Thu 11/8/18	Fri 11/9/18	Sat 11/10/18	Sun 11/11/18	Mon 11/12/18	Tue 11/13/18						
	Analyst		Analyst		Analyst		Analyst							
	NY	NY MIL	NY	AME	BE	AM	MH	BB	NY	NY	NY	NY	NY	
Control	25.6°C	25.0°C	24.0°C	24.6°C	24.3°C	24.6°C	24.5	24.0°C	24.0°C	24.3°C	24.8°C	24.3°C	25.1°C	24.6°C
0.1875	25.6°C	25.0°C	24.2°C	24.5°C	26.0°C	24.6°C	24.3	24.1°C	25.7°C	24.5°C	24.8°C	24.5°C	24.4°C	24.5°C
0.375	25.6°C	25.1°C	24.4°C	24.5°C	26.0°C	24.6°C	24.6	24.0°C	25.4°C	24.6°C	25.2°C	24.6°C	24.7°C	24.8°C
0.75	25.5°C	25.0°C	24.6°C	24.6°C	25.9°C	24.6°C	24.5	24.1°C	25.7°C	24.3°C	25.0°C	24.6°C	24.6°C	24.6°C
1.5	25.6°C	24.9°C	/	/	/	/	/	/	/	/	/	/	/	/
3	25.9°C	24.9°C	/	/	/	/	/	/	/	/	/	/	/	/
	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)	(initial)	(final)

Thermometer serial number: 87870092

Reference Toxicant November 2018

November 2018
Reference Toxicant Test

Chart Devices Used in
Thermo-Kool Walk-in Incubator:
Dickson (small chart)
~~Thermo-Kool (large chart)~~

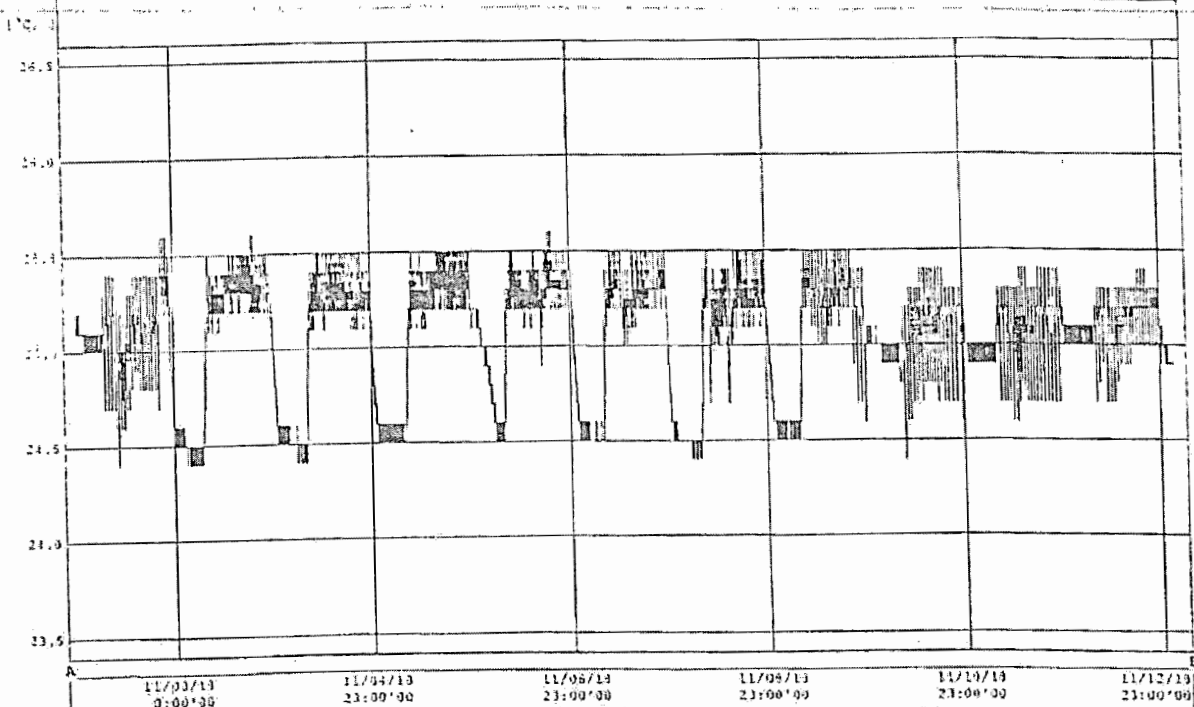


November 2018 Reference Toxicant Test

Week of 11-6-18 to 11-13-18 BE

Thermo Graph for Windows

11/13/2018 16:11:45



ch	Name	Intvl.	Sample	Cur.A	Cur.B	A<->B	High	Low	Avg.	Unit
1	Ch1	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
2	Ch2	2min.	8000	-----	-----	-----	25.6	24.4	25.1	°C
Cur.A Date : 11/01/2018 21:20'52				Data Range 11/01/2018 21:20'52-11/13/2018 5:23'09						
Cur.B Date : 11/13/2018 5:23'09				Calc.Range 11/02/2018 0:32'50-11/13/2018 2:11'11						
diff. A-B : 11 09:02'17.000										

TOXICITY TEST DATA SHEET - *Pimephales promelas* (fathead minnow) 7-Day Survival & Weight Data

Reference Toxicant November 2018

Test Date: November 6-13, 2018

NPDES #: KCI

NUMBER OF SURVIVORS									
Sample Distribution		Sample #1 Tues/Wed		Sample #2 Thurs/Fri		Sample #3 Sat/Sun/Mon			
Day of the Week and Date		Tue 11/6/18	Wed 11/7/18	Thu 11/8/18	Fri 11/9/18	Sat 11/10/18	Sun 11/11/18	Mon 11/12/18	Tue 11/13/18
Effluent Conc. In%	ID of Rep.	0 hours	24 hours	48 hours	72 hours	96 hours	120 hours	144 hours	168 hours
Control #30	A: 1	10	10	10	9	9	9	9	9
	B: 3	10	10	10	10	10	10	10	10
	C: 4	10	10	10	10	10	10	10	10
	D: 6	10	10	10	10	10	10	10	10
0.1875	A: 2	10	10	10	10	10	10	10	10
	B: 4	10	10	10	10	10	10	10	10
	C: 5	10	10	10	10	10	10	10	10
	D: 5	10	10	10	10	10	10	10	10
0.375	A: 3	10	10	10	10	9	9	9	9
	B: 1	10	10	10	10	10	10	10	10
	C: 6	10	10	10	10	9	9	9	9
	D: 4	10	9	9	9	9	9	9	9
0.75	A: 4	10	5	5	4	4	4	4	4
	B: 2	10	6	5	5	5	5	5	4
	C: 1	10	4	3	3	3	3	3	1
	D: 3	10	8	8	8	7	7	7	5
1.5	A: 5	10	0	0	0	0	0	0	0
	B: 6	10	0	0	0	0	0	0	0
	C: 2	10	0	0	0	0	0	0	0
	D: 2	10	0	0	0	0	0	0	0
3	A: 6	10	0	0	0	0	0	0	0
	B: 5	10	0	0	0	0	0	0	0
	C: 3	10	0	0	0	0	0	0	0
	D: 1	10	0	0	0	0	0	0	0
Initials of Analyst Checking Survival		CGM	MIL/SWS	AME	AM	BB/MH	NY	NY	AME
Time that Minnows were Examined:		15:50	14:58	15:00	15:06	10:59	15:05	11:27	14:45
Carboy used to dilute sample:		S,F 11-5	S,F 11-6	S,F 11-6	S,F 11-6	S,F 11-6	S,F 11-6	S,F 11-6	S,F 11-6

Fish Cup Batch/Lot: AUG178UR3

COMMENTS: Minnows used in this test are from ESC Lot#

110518HD Minnows were hatched on

11/5/2018

Survival ≥ 80%?

YES NO

≥ 0.25mg Average Weight in Surviving Controls?

YES NO

Is (growth) CV < 40%?

YES NO

Control Valid?

YES NO

WEIGHT DATA for SURVIVING MINNOWS							
	Weight Empty Bow (mg)	Boat w/ Fish (mg)	Weight of Larvae (mg)	Mean Weight of Larvae (mg)	Total of Mean	Mean per Concentration	
Control	A	1302.98	1306.03	3.05	0.305	1.3000	0.3250
	B	1301.46	1304.55	3.09	0.309		
	C	1298.18	1301.36	3.18	0.318		
	D	1308.72	1312.4	3.68	0.368		
0.1875	A	1299.16	1302.6	3.44	0.344	1.2500	0.3125
	B	1291.45	1294.47	3.02	0.302		
	C	1294.96	1298	3.04	0.304		
	D	1294.34	1297.34	3	0.3		
0.375	A	1295.14	1298.09	2.95	0.295	1.1800	0.2950
	B	1305.12	1308.38	3.26	0.326		
	C	1293	1295.76	2.76	0.276		
	D	1298.46	1301.29	2.83	0.283		
0.75	A	1307.11	1308.9	1.79	0.179	0.5530	0.1382
	B	1314.41	1316.05	1.64	0.164		
	C	1312.64	1313.08	0.44	0.044		
	D	1301.84	1303.5	1.66	0.166		
1.5	A	0	0	#VALUE!	#VALUE!	#####	#####
	B	0	0	#VALUE!	#VALUE!		
	C	0	0	#VALUE!	#VALUE!		
	D	0	0	#VALUE!	#VALUE!		
3	A	0	0	#VALUE!	#VALUE!	#####	#####
	B	0	0	#VALUE!	#VALUE!		
	C	0	0	#VALUE!	#VALUE!		
	D	0	0	#VALUE!	#VALUE!		

Analyst: BB MIL

Date & Time Put in Oven	Date & Time Removed
11-13-18 @ 14:50	11-14-18 @ 16:05

Oven Temp:	72°C	Oven Temp:	69°C
------------	------	------------	------

Analyst:	AME	Analyst:	MIL
----------	-----	----------	-----

Login #: Potassium Chloride

CETIS Summary Report

Report Date: 15 Nov-18 10:01 (p 1 of 2)
 Test Code/ID: RTPP110618 / 18-0436-0614

Fathead Minnow 7-d Larval Survival and Growth Test			Pace National		
Batch ID: 13-8918-5753	Test Type: Growth-Survival (7d)	Analyst: Clarissa Moore			
Start Date: 06 Nov-18	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water			
Ending Date: 13 Nov-18	Species: Pimephales promelas	Brine:			
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO	Age: <36		
Sample ID: 05-4174-5007	Code: 204A5F6F	Project:			
Sample Date: 05 Nov-18	Material: Potassium chloride	Source: Reference Toxicant			
Receipt Date: 06 Nov-18	CAS (PC):	Station:			
Sample Age: 24h	Client: Reference Toxicant				

Comments:
 Reference Toxicant (November 2018) P. promelas

Multiple Comparison Summary								
Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
20-6118-8778	Mean Dry Biomass-mg	Dunnatt Multiple Comparison Test	0.375	0.75	0.5303		18.9%	1

Point Estimate Summary								
Analysis ID	Endpoint	Point Estimate Method	✓ Level	gm/L	95% LCL	95% UCL	TU	S
14-6263-8655	7d Survival Rate	Linear Interpolation (ICPIN)	LC5	0.3356	0.2486	0.4371		1
			LC10	0.3956	0.3608	0.4478		
			LC15	0.4308	0.3895	0.4819		
			LC20	0.463	0.4182	0.5222		
			✓ LC25	0.4952	0.4429	0.56		
			✓ LC40	0.5918	0.5109	0.687		
19-0644-4855	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC5	0.2277	n/a	0.5061		1
			✓ IC10	0.381	n/a	0.4726		
			✓ IC15	0.4199	0.1742	0.509		
			✓ IC20	0.4587	0.344	0.5559		
			IC25	0.4976	0.3863	0.6047		
			IC40	0.6142	0.4913	0.7534		
IC50	0.692	0.5436	0.8888					

November 2018 Reference Toxicant Test

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
14-6263-8655	7d Survival Rate	Control Resp	0.975	0.8	>>	Yes	Passes Criteria
19-0644-4855	Mean Dry Biomass-mg	Control Resp	0.325	0.25	>>	Yes	Passes Criteria
20-6118-8778	Mean Dry Biomass-mg	Control Resp	0.325	0.25	>>	Yes	Passes Criteria
20-6118-8778	Mean Dry Biomass-mg	PMSD	0.1891	0.12	0.3	Yes	Passes Criteria

7d Survival Rate Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.9750	0.8954	1.0000	0.9000	1.0000	0.0250	0.0500	5.13%	0.00%
0.1875		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-2.56%
0.375		4	0.9250	0.8454	1.0000	0.9000	1.0000	0.0250	0.0500	5.41%	5.13%
0.75		4	0.3500	0.0744	0.6256	0.1000	0.5000	0.0866	0.1732	49.49%	64.10%
1.5		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%
3		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		100.00%

Mean Dry Biomass-mg Summary											
Conc-gm/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.325	0.2786	0.3714	0.305	0.368	0.01459	0.02918	8.98%	0.00%
0.1875		4	0.3125	0.279	0.346	0.3	0.344	0.01053	0.02106	6.74%	3.85%
0.375		4	0.295	0.2598	0.3302	0.276	0.326	0.01105	0.0221	7.49%	9.23%
0.75		4	0.1383	0.0377	0.2388	0.04399	0.179	0.03159	0.06319	45.71%	57.46%
1.5		4	0	0	0	0	0	0	0		100.00%
3		4	0	0	0	0	0	0	0		100.00%

CETIS Summary Report

Report Date: 15 Nov-18 10:01 (p 2 of 2)
 Test Code/ID: RTPP110618 / 18-0436-0614

Fathead Minnow 7-d Larval Survival and Growth Test						Pace National
7d Survival Rate Detail						
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	D	0.9000	1.0000	1.0000	1.0000	
0.1875		1.0000	1.0000	1.0000	1.0000	
0.375		0.9000	1.0000	0.9000	0.9000	
0.75		0.4000	0.4000	0.1000	0.5000	
1.5		0.0000	0.0000	0.0000	0.0000	
3		0.0000	0.0000	0.0000	0.0000	
Mean Dry Biomass-mg Detail						
Conc-gm/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	D	0.305	0.309	0.318	0.368	
0.1875		0.344	0.302	0.304	0.3	
0.375		0.295	0.326	0.276	0.283	
0.75		0.179	0.184	0.04399	0.166	
1.5		0	0	0	0	
3		0	0	0	0	

November 2018 Reference Toxicant Test

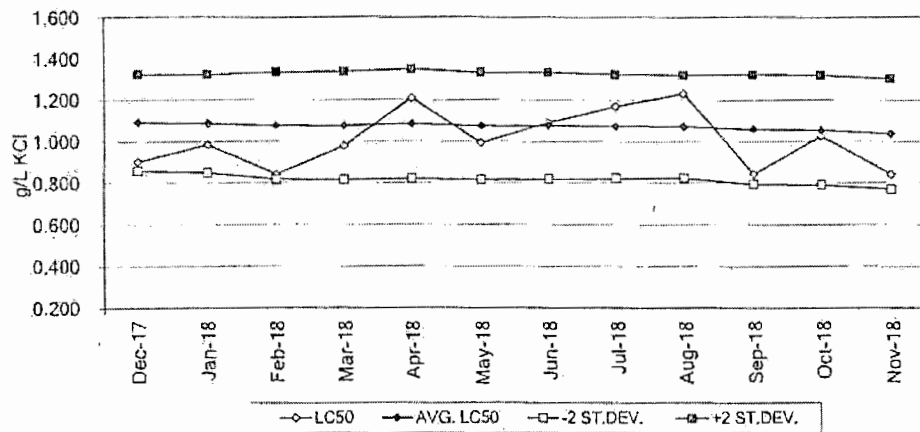
1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

REFERENCE TOXICANT LC50
Pimephales promelas

48 Hour Acute Data



48 HOUR ACUTE TOXICITY DATA FOR
Pimephales promelas

DATE	LC50 (g/L KCl)	95% CONFIDENCE (upper)	(lower)	AVG.LC50 (g/L KCl)	METHOD	+2 STD	-2 STD
Jun 18	1.091	1.214	0.979	1.076	SPKR	1.3346	0.8175
Jul 18	1.168	1.291	1.059	1.073	SPKR	1.3245	0.8210
Aug 18	1.231	1.351	1.122	1.072	SPKR	1.3207	0.8227
Sep 18	0.841	0.934	0.757	1.057	SPKR	1.3211	0.7923
Oct 18	1.026	1.159	0.909	1.055	SPKR	1.3192	0.7900
Nov 18	0.841	0.934	0.757	1.036	SPKR	1.3032	0.7688

**Current Test Dates: 11/1-3/2018

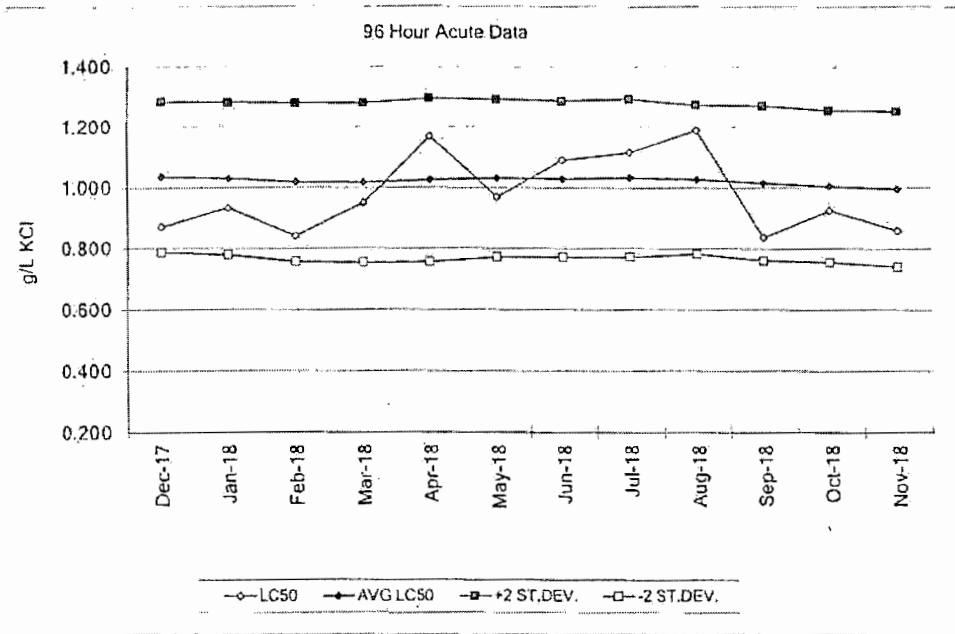
Aquatic BioSystems, Inc • Quality Research Organisms

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

REFERENCE TOXICANT LC50
Pimephales promelas



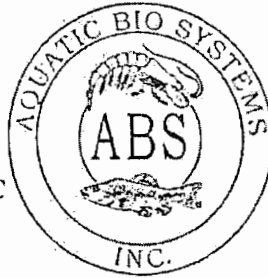
96 Hour Acute Toxicity Data For
Pimephales promelas

Date	LC50 (g/L KCl)	95% Confidence (upper)	(lower)	AVG.LC50 (g/L KCl)	Method	+2 STD	-2 STD
Jun-18	1.091	1.214	0.979	1.029	SPKR	1.2863	0.7714
Jul-18	1.116	1.242	0.993	1.032	SPKR	1.2920	0.7721
Aug-18	1.189	1.341	1.054	1.028	SPKR	1.2729	0.7823
Sep-18	0.836	0.932	0.750	1.015	SPKR	1.2701	0.7602
Oct-18	0.925	1.041	0.822	1.005	SPKR	1.2547	0.7547
Nov-18	0.858	0.948	0.777	0.996	SPKR	1.2520	0.7397

**Current Test Dates: 11/1-5/2018

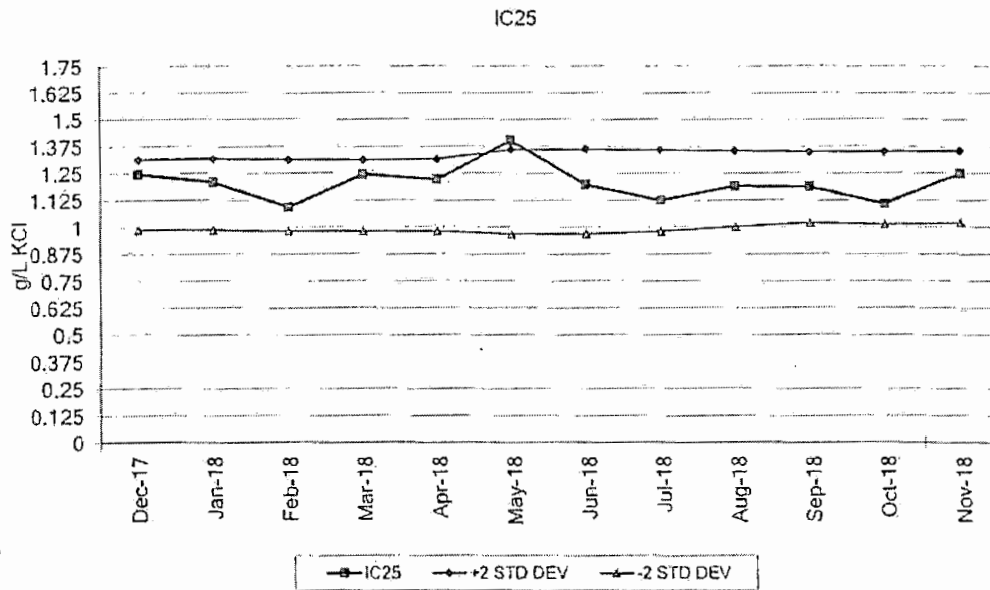
Aquatic BioSystems, Inc • Quality Research Organisms

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

Pimephales promelas



Chronic 7 Day Survival Test Data

Date	NOEC (g/L KCl)	LOEC (g/L KCl)
Jun-18	0.50	1.0
Jul-18	0.50	1.0
Aug-18	0.50	1.0
Sep-18	0.50	1.0
Oct-18	0.50	1.0
Nov-18	0.50	1.0

IC 25 for Growth Test

Date	IC25 g/L KCl	95% Confidence (upper)	(lower)	Avg. IC25 g/L KCl	+2 STD DEV	-2 STD DEV
Jun-18	1.196	1.282	0.961	1.165	1.362	0.967
Jul-18	1.124	1.294	0.028	1.169	1.358	0.979
Aug-18	1.189	1.341	1.054	1.177	1.353	1.001
Sep-18	1.187	1.288	0.288	1.184	1.350	1.019
Oct-18	1.107	1.336	0.255	1.180	1.348	1.011
Nov-18	1.250	1.250	1.250	1.187	1.354	1.020

**Current Test Dates: 11/1-8/2018

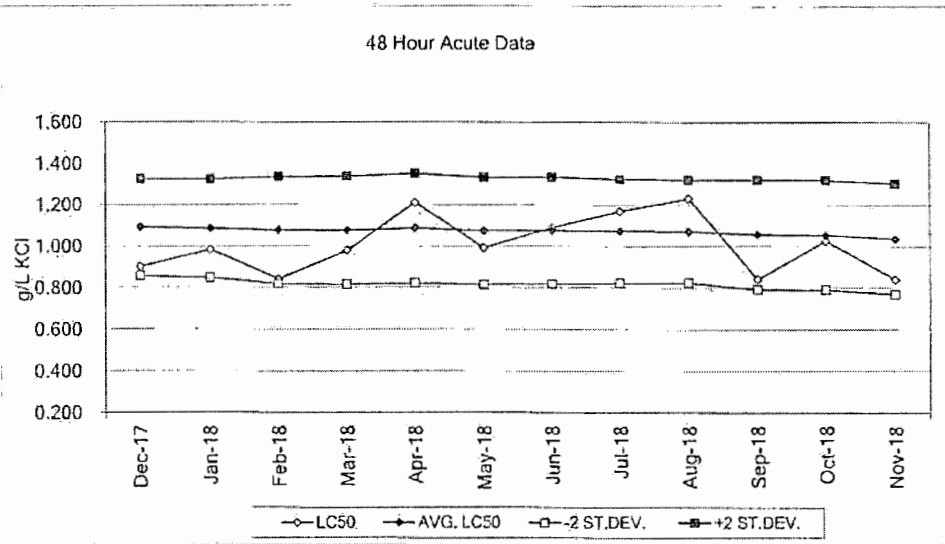
Aquatic BioSystems, Inc • Quality Research Organisms

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

REFERENCE TOXICANT LC50
Pimephales promelas



48 HOUR ACUTE TOXICITY DATA FOR
Pimephales promelas

DATE	LC50 (g/L KCl)	95% CONFIDENCE (upper)	(lower)	AVG.LC50 (g/L KCl)	METHOD	+2 STD	-2 STD
Jun 18	1.091	1.214	0.979	1.076	SPKR	1.3346	0.8175
Jul 18	1.168	1.291	1.059	1.073	SPKR	1.3245	0.8210
Aug 18	1.231	1.351	1.122	1.072	SPKR	1.3207	0.8227
Sep 18	0.841	0.934	0.757	1.057	SPKR	1.3211	0.7923
Oct 18	1.026	1.159	0.909	1.055	SPKR	1.3192	0.7900
Nov 18	0.841	0.934	0.757	1.036	SPKR	1.3032	0.7688

**Current Test Dates: 11/1-3/2018

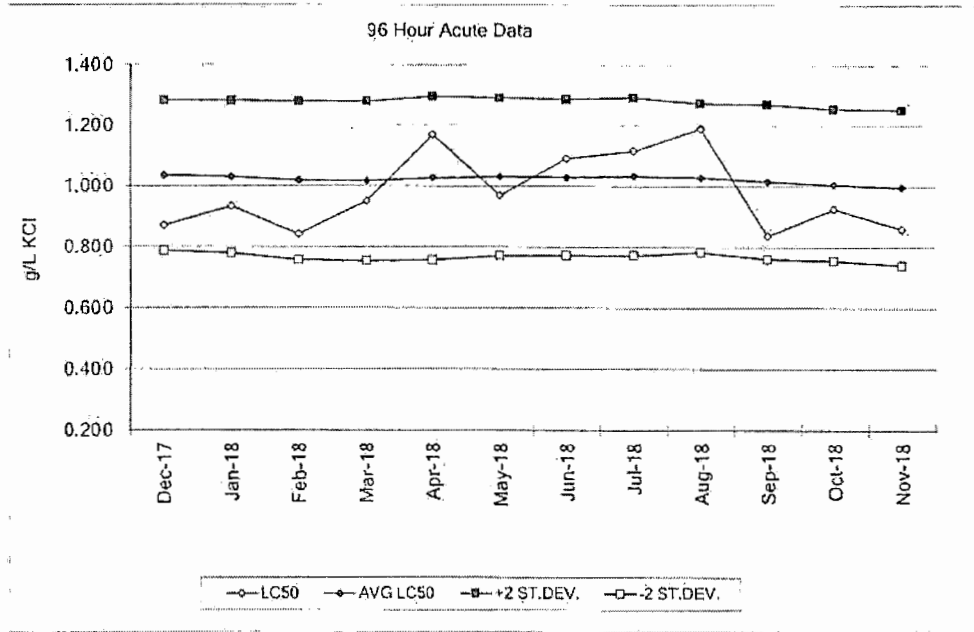
Aquatic BioSystems, Inc • Quality Research Organisms

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

REFERENCE TOXICANT LC50
Pimephales promelas



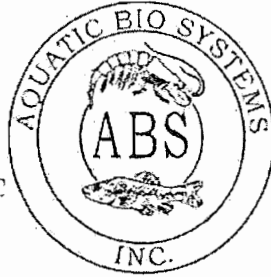
96 Hour Acute Toxicity Data For
Pimephales promelas

Date	LC50 (g/L KCl)	95% Confidence (upper) (lower)	AVG.LC50 (g/L KCl)	Method	+2 STD	-2 STD
Jun-18	1.091	1.214 0.979	1.029	SPKR	1.2863	0.7714
Jul-18	1.116	1.242 0.993	1.032	SPKR	1.2920	0.7721
Aug-18	1.189	1.341 1.054	1.028	SPKR	1.2729	0.7823
Sep-18	0.836	0.932 0.750	1.015	SPKR	1.2701	0.7602
Oct-18	0.925	1.041 0.822	1.005	SPKR	1.2547	0.7547
Nov-18	0.858	0.948 0.777	0.996	SPKR	1.2520	0.7397

**Current Test Dates: 11/1-5/2018

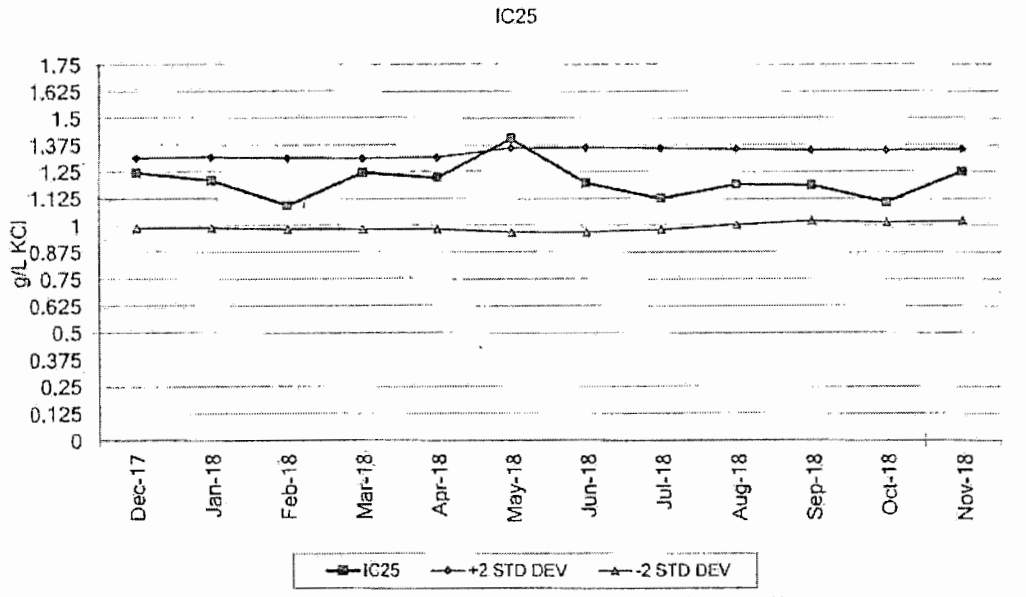
Aquatic BioSystems, Inc • Quality Research Organisms

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel:970/484-5091 Fax:970/484-2514

Pimephales promelas



Chronic 7 Day Survival Test Data

Date	NOEC (g/L KCl)	LOEC (g/L KCl)
Jun-18	0.50	1.0
Jul-18	0.50	1.0
Aug-18	0.50	1.0
Sep-18	0.50	1.0
Oct-18	0.50	1.0
Nov-18	0.50	1.0

IC 25 for Growth Test

Date	IC25 (g/L KCl)	95% Confidence (upper)	95% Confidence (lower)	Avg. IC25 (g/L KCl)	+2 STD DEV	-2 STD DEV
Jun-18	1.196	1.282	0.961	1.165	1.362	0.967
Jul-18	1.124	1.294	0.028	1.169	1.358	0.979
Aug-18	1.189	1.341	1.054	1.177	1.353	1.001
Sep-18	1.187	1.288	0.288	1.184	1.350	1.019
Oct-18	1.107	1.336	0.255	1.180	1.348	1.011
Nov-18	1.250	1.250	1.250	1.187	1.354	1.020

**Current Test Dates: 11/1-8/2018


Aquatic BioSystems, Inc • Quality Research Organisms

Poly Environmental Corp. Env. Lab P. O. Box 837 Dothan, AL 36303 Mr. Steve Davis P. O. Box 837 Dothan, AL 36303		Report to: Mr. Steve Davis Email To: sdavis@polyengineering.com haley@poly-inc.com		Billing Information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303	
Description: Headland STP Biomon Project: Client Project # POLYENV-BIO HEADLAND		Site/Facility ID # AL0027014 Lab Project # POLYENV-BIO HEADLAND		Rush? (Lab MUST be Notified) Same Day _____ Next Day _____ 5 Day (Fed Only) _____ 10 Day (Fed Only) _____ Three Day _____ Date Results Needed	
Collected by (Sample): Collected by (Signature): Packed on Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Sample ID: SAMPLE 1 Matrix: WW Comp/Grab: WW Date: 11-11-18 Depth: 860-800		Remarks: Sample #1 - Collect a 24hr composite sample from Sun-Mon (11/11-11/12), Ship sample to arrive at lab on Tuesday 11/13/2018. RAD SOURCE: RMR pH: 6.9 Temp: _____ Flow: 850 Other: _____ Tracking #: 4624 8001 2327	
Matrix: * Soil - Air - Air - Filter * Groundwater - B - Bioassay * Wastewater * Drinking Water * Other		Samples required via: UPS / FedEx Location:		Received by (Signature): Date: 11/12/18 Time: 9:03	
Received by (Signature): Date: 11/13/18 Time: 12:23		Received by (Signature): Date: 11/13/18 Time: 12:23		Received for Lab by (Signature): Date: 11/13/18 Time: 12:23	
Conditions: NCF 180		Hold: Date: 11/13/18 Time: 12:23		It preservation required by Lab Date/Time: Temp: 4-10-58 HCL / MACH:	

Agreement: POLYENV
 Telephone: 197970
 Fax: 677482
 TSC: 702 - Cassandra Foster
 Date: 10/27/18
 Shipped via: FedEx Ground



(Check) Copy of _____
 of _____
 Analytic / Container / Preservative

Poly Environmental Corp. Env. Lab PO Box 837 Dothan, AL 36303		Billing Information: Mr. Steve Davis P. O. Box 837 Dothan, AL 36303		Report to: Mr. Steve Davis		Email To: sdavis@polyengineering.com, hrailey@poly-inc.com		Analysis / Container / Preservative Pres Cnk: LD		23045 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-756-5858 Phone: 800-737-1859 Fax: 615-752-5859 	
Project Description: Headland STP Biomon		City/State Collected: Headland FL (67)		Lab Project #: POLYENV-BIO HEADLAND		Client Project #: AL0027014		P.O. #: AL0027014		Account: POLYENV Template: T97971 Prelogia: P677483 TSR: 702 - Cassandra Foster PB: BF 10/27/18 Shipped Via: FedEx Ground	
Phone: 334-793-4700 Fax: 324-677-9477		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #: 1043601 F193		Date Results Needed: 11-13-14-15		No. of Vials: 5		Analysis / Container / Preservative: ALKBIO 125mlHDPE-NoPres Biomonitoring 1L-HDPE-NoPres HARD 250mlHDPE-HNO3	
Collected by (print): Jana Singleton Collected by (signature): <i>Jana Singleton</i> Packed on: <input type="checkbox"/> N <input type="checkbox"/> Y		Site/Facility ID #: AL0027014		Date: 11-13-14-15		Time: 9:00-9:00		Matrix: WW		Remarks: Sample #2 - Collect a 24hr composite sample from Tues-Wed (11/13-11/14). Ship sample to arrive at lab on Thursday 11/15/2018.	
Sample ID: SAMPLE 2 Tox Screen		Comp/Grab: Comp		Date: 11-13-14-15		Time: 9:00-9:00		Matrix: WW		pH: 6.7 Temp: _____ Flow: 425 Other: _____	
Relinquished by (Signature): <i>Jana Singleton</i> Date: 11/14/18 Time: 1029		Relinquished by (Signature): <i>Steve Davis</i> Date: 11/14/18 Time: 1629		Received by (Signature): <i>Steve Davis</i> Date: 11/14/18 Time: 1629		Temp: _____ °C Bottles Received: 5		If preservation required by Login, Date/Time: _____		Sample Receipt Checklist: <input checked="" type="checkbox"/> 000 Seal Presence/Integrity <input checked="" type="checkbox"/> 000 Signed/Annotated <input checked="" type="checkbox"/> Bottles arrive intact <input checked="" type="checkbox"/> Correct Bottles used <input checked="" type="checkbox"/> Sufficient volume sent <input checked="" type="checkbox"/> If Applicable <input checked="" type="checkbox"/> Vial Deep Headspace <input checked="" type="checkbox"/> Preservation Correct/Checked RAD SCREEN: <0.0 mSv/h	
Relinquished by (Signature): _____ Date: _____ Time: _____		Relinquished by (Signature): _____ Date: _____ Time: _____		Received for lab by (Signature): <i>Steve Davis</i> Date: 11/15/18 Time: 9:00		Temp: _____ °C Bottles Received: 5		If preservation required by Login, Date/Time: _____		Holder: _____ Condition: NCF / OK	

71 of 72

