STATE OF COLORADO

Hays - DNR, Peter <peter.hays@state.co.us>

Schwartzwalder 2nd Quarter WET Test DMR Submittal 2025

1 message

pdelaney@blackfoxmining.com <pdelaney@blackfoxmining.com> Mon, Jul 28, 2025 at 10:12 PM
To: Peter Hays - DNR <peter.hays@state.co.us>
Cc: Quinn Westmoreland <quinn.westmoreland@linkan.com>, Adam Billin <Adam.Billin@linkan.com>, Chris Prosper <chris.prosper@linkan.com>, Sam Billin <sam.billin@linkan.com>, Jared Buck <jared.buck@linkan.com>, Brandy Wadford <brandy.wadford@linkan.com>, alex.schwiebert@linkan.com

All,

Attached is the Copy of Record (COR) for the Discharge Monitoring Report (DMR) for 2nd Quarter WET Test for the Schwartzwalder Mine site.

Let me know if you have any questions.

Thanks,

Patrick Delaney

Environmental Manager

Black Fox Mining, LLC

Cell: 315-414-6986

BLACK FOX MINING LLC

www.blackfoxmining.com

2025 2ndQ Schwartzwalder Outfall 001A WET Test DMR COR.zip
4800K

SEACREST GROUP
ENVIRONMENTAL SERVICES LABORATORY

July 2, 2025

Jared Buck
Linkan Engineering
400 Corporate Circle Suite H
Golden, CO 80401

Dear Jared:

Enclosed is the report for chronic biomonitoring tests performed for Linkan Engineering on effluent from the Schwartzwalder Mine 001A outfall. There was no statistically significant toxicity to either test species at any effluent concentration. The effluent passes WET (Whole Effluent Toxicity) testing requirements for this sampling period.

If you have any questions or concerns, please do not hesitate to contact me at (303) 661-9324.

Best regards,

Ethan White
Aquatic Toxicologist II

REPORT OF CHRONIC BIOMONITORING TESTS CONDUCTED FOR LINKAN ENGINEERING ON EFFLUENT FROM THE SCHWARTZWALDER MINE 001A OUTFALL

Prepared for:

Jared Buck
Linkan Engineering
400 Corporate Circle Suite H
Golden, CO 80401

Prepared by:

Ethan White
SeaCrest Group
500 S Arthur Ave. Suite 450
Louisville, Colorado 80027-3065
(303) 661-9324

July 2, 2025

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LIST OF TABLES

Chronic Toxicity Test Summary

Test:	7-day static renewal using *Ceriodaphnia dubia* 7-day static renewal using fathead minnow *(Pimephales promelas)*
Client:	Linkan Engineering
Test Procedure Followed:	*Ceriodaphnia dubia*: EPA/821/R-02-013. Method 1002.0 (2002) fathead minnow: EPA/821/R-02-013. Method 1000.0 (2002)
Sample Number:	525317.B
Dilution Water:	moderately hard laboratory reconstituted water
Test Organism Source:	SeaCrest Group
Reference Toxicant:	Sodium Chloride

Sample	Time of Collection	Date of Collection	Time of Receipt	Date of Receipt
Effluent 1	1330	06-23-2025	1600	06-23-2025
Effluent 2	1400	06-24-2025	1530	06-24-2025
Effluent 3	1400	06-25-2025	1620	06-25-2025

	Ceriodaphnia dubia	**fathead minnow**
Test Initiation Time	1145	1620
Test Initiation Date	06-24-2025	06-23-2025
Test Completion Time	1205	1520
Test Completion Date	06-30-2025	06-30-2025

Abstract with Results

Test Concentrations:	Control (0%), 20%, 40%, 60%, 80%, 100%
Number of Organisms/Concentration:	10 for *Ceriodaphnia dubia* 40 for fathead minnow
Replicates at each Concentration:	10 for *Ceriodaphnia dubia* 4 for fathead minnow

	Ceriodaphnia dubia	**fathead minnow**
Test vessel size/Exposure volume	30ml/15ml	500ml/200ml
Lethal LOEL/LC25	>100%/>100%	>100%/>100%
Pass/Fail Status	**PASS**	**PASS**
Temperature Range (°C)	24.1 – 25.9	24.1 – 25.9
Dissolved Oxygen Range (mg/L)	6.4 – 8.0	3.8 – 8.1
pH Range	7.7 – 8.6	7.6 – 8.2

	Control (*Cerio*/FHM)	**Effluent Sample**
Hardness (mg/L as $CaCO_3$)	96/100	0/0/2
Alkalinity (mg/L as $CaCO_3$)	62/63	75/79/85
Total residual chlorine (mg/L)	<0.01	<0.01/<0.01/0.02
Total ammonia (mg/L as NH_3)	<0.03	0.03/<0.03/<0.03

INTRODUCTION

Biomonitoring provides an effective means by which the toxicity of discharges from municipal, industrial, and mining operations can be tested. Among the advantages of biomonitoring is the ability to test complex effluents containing a broad range of contaminants. Biomonitoring, when used in conjunction with chemical analyses, can generate data capable of identifying a much wider range of contaminants.

The Colorado Water Quality Control Division requires certain NPDES permittees to perform acute and/or chronic biomonitoring tests. The chronic test measures significant differences in lethality and in reproduction (*Ceriodaphnia dubia*) or growth (fathead minnow – *Pimephales promelas*) between control and effluent-exposed organisms.

The present report discusses the results of chronic biomonitoring tests conducted on effluent from the Linkan Engineering Schwartzwalder Mine 001A discharge. These tests were conducted in accordance with EPA and State of Colorado procedures in June 2025.

MATERIALS AND METHODS

Sample Collection

Two gallons of the effluent were collected on three separate dates as specified in Permit CO-0001244. Samples were delivered chilled to the SeaCrest lab where they were held at 0-6°C. Chain of custody forms showing sample collection and laboratory arrival times are included (Appendix 1).

Dilution Water

Laboratory reconstituted water was used as both the dilution water source and the control for the tests. Reconstituted water for the *Ceriodaphnia dubia* test was produced by adding sodium bicarbonate, calcium sulfate, magnesium sulfate, potassium chloride, and sodium selenate to deionized water. Reconstituted water for the fathead minnow test was produced by adding sodium bicarbonate, calcium sulfate, magnesium sulfate, and potassium chloride to deionized water.

Test Organisms

The biomonitoring test used *Ceriodaphnia dubia,* cultured in the SeaCrest laboratory. The organisms are cultured in brood culture boards from which individual females are monitored for survival and reproduction for periods of up to two weeks. Neonates less than 24-hours old, released from third or subsequent broods of eight or more within an 8-hour period, are collected from the brood chambers and used in tests. The animals are fed daily with a mixture of Yeast, Cereal Leaves, and Trout Chow (YCT), produced in-house. This is supplemented with cultured green algae *(Selenastrum capricornutum)* provided by Aquatic Biosystems.

Less than one-day-old fathead minnow, cultured in the laboratory, were also used in the test. Adult fish are maintained in 10-gallon aquaria where females deposit their eggs on the under-surface of split PVC pipe sections. The eggs are collected daily and transferred to aerated containers where they hatch after three to four days. The larval fish are fed newly hatched brine shrimp *(Artemia* sp.) at least twice per day.

In-house organisms are tested monthly in a reference toxicant test using sodium chloride to monitor overall health and test reproducibility. (Appendix 4).

Test Procedures

Upon receipt at the lab, samples were analyzed for alkalinity, ammonia, chlorine, conductivity, dissolved oxygen, hardness, and pH.

Methods used in chemical analysis

Alkalinity	EPA 310.2	Hach 8203	I-2030-85.2
Ammonia	SM4500-NH_3, C-E1997	ASTM D1426-08	
Chlorine	SM4500-Cl D	Hach 10026	
Conductivity	SM2510		
Dissolved Oxygen	SM4500-O	Electrode: G-2001	Winkler (QC): B-F-2001
Hardness	SM2340 B or C	Hach 8213	
pH	SM4500-H+ B-2000		

The test followed procedures in EPA[3] and CDPHE[4] guidelines. Exposure concentrations included control (0%), 20%, 40%, 60%, 80%, and 100% mixtures, diluted with moderately hard laboratory reconstituted water.

Individual *Ceriodaphnia dubia* were placed in 30ml plastic containers containing approximately 15ml of exposure medium. Ten replicates at each concentration were used. The animals were fed daily with the YCT mixture and an equal volume of the green algae *(Selenastrum capricornutum)*. The exposure medium was changed daily in each container and the number of young released overnight were counted and recorded. Young were removed from the containers daily and discarded. Routine measurements were made each day of temperature, dissolved oxygen, and pH before and after the water changes.

Fathead minnow were exposed in 500ml plastic cups to which 250ml of media was replaced daily. Four replicates were used at each concentration. Ten fish, less than 24-hours old, were placed in each cup. The fish were monitored daily for survival and fed live brine shrimp at least twice per day. After seven days, the fish were removed from the cups, euthanized with isopropyl alcohol, and then placed in aluminum pans and dried in an oven for a minimum of six hours at 100ºC. The pans were then weighed on a five-place analytical balance to determine the average dry weight of the fish from each replicate.

Data Analysis

Data from the tests were analyzed on a personal computer using the CETIS program (developed by Tidepool Scientific Software). Statistical tests used in the analyses are shown in Table 1. Test acceptability was determined using control survival and reproduction/growth criteria, concentration-response relationships, and percent minimum significant differences (USEPA [5,6]).

Table 1. Statistical methods used in testing for significant differences in test parameters.

Variance	Distribution
Bartlett Equality of Variance Test	Shapiro-Wilk W Normality Test

Statistical Difference				
Species	Survival	Growth	Reproduction	IC_{25}
Ceriodaphnia dubia	Fisher Exact/Bonferroni-Holm Test	N/A	Steel Many-One Rank Sum Test	ICp
fathead minnow	Steel Many-One Rank Sum Test	Dunnett Multiple Comparison Test	N/A	ICp

RESULTS

Ceriodaphnia dubia Test Results

Test results for the *Ceriodaphnia dubia* are summarized in Table 2 and provided on the data sheets located in Appendix 2. Survival was 0% in the 100% effluent and ranged from 90-100% in the remaining effluent concentrations. Control survival was 100%. Statistically significant lethality was measured in the 100% effluent concentration when compared to the control. The LOEL (Lowest Observed Effect Level) for lethality was >100% and the LC_{25} (Lethal Concentration 25) for lethality was 84.5%.

Average number of neonates was 0.4 in the 100% effluent concentration and ranged from 24.9 – 28.5 in the remaining effluent concentrations. Average number of neonates in the control was 25.3 for statistical analyses and test acceptability criteria. Statistically significant differences in the number of neonates were found between the control and the 100% effluent concentration. The LOEL for reproduction was >100% and the IC_{25} (Inhibition Concentration 25) for reproduction was 84.2%.

Table 2. Summary of *Ceriodaphnia dubia* test results. An asterisk (*) denotes a statistically significant difference from the control.

Concentration	Percent Survival	Mean Neonates	Min.	Max.	Significant Difference	
					Lethality	Reprod.
Control (0%)	100	25.3	16	34		
20%	100	28.5	23	32		
40%	90	24.9	0	39		
60%	100	25.3	16	35		
80%	100	26.3	20	31		
100%	0	0.4	0	3	*	*

Fathead Minnow Test Results

Fathead minnow results are summarized in Table 3 and are provided on data sheets in Appendix 3. Survival was 72.5% in the 100% effluent concentration and ranged from 95% − 97.5% in the remaining effluent concentrations. Control survival was 97.5%. No statistically significant lethality was measured in any effluent concentration when compared to the control. The LOEL (Lowest Observed Effect Level) for lethality was >100% and the LC_{25} (Lethal Concentration 25) for lethality was 99.5%.

Average weight in the 100% effluent concentration was 0.233mg and ranged from 0.553mg - 0.586mg per individual in the remaining effluent concentrations. Average weight for the control fish was 0.587mg for statistical analyses and test acceptability criteria. Statistically significant differences for growth were measured in the 100% effluent concentration when compared to the control. The LOEL for growth was 100% and the IC_{25} for growth was 87%.

Table 3. Summary of fathead minnow test results. An asterisk (*) denotes a statistically significant difference from the control.

Concentration	Percent Survival	Average Weight (mg)	Min.	Max.	Significant Difference	
					Lethality	Growth
Control (0%)	98	0.587	0.544	0.644		
20%	95	0.586	0.564	0.614		
40%	98	0.565	0.442	0.675		
60%	98	0.562	0.522	0.610		
80%	98	0.553	0.501	0.601		
100%	73	0.233	0.151	0.308		*

Test Acceptability

Acceptable control survival (80%) was achieved in both tests. Similarly, *Ceriodaphnia dubia* reproduction (average 15 neonates/organism) and fathead minnow growth (average 0.250mg/test container) in control organisms met required levels. PMSD was within the required limits for an acceptable test (Table 4).

Table 4. PMSD for chronic test parameters.

	fathead minnow growth		***C. dubia* reproduction**	
	Lower bound	Upper bound	Lower bound	Upper bound
PMSD	12	30	13	47
(% Minimum significant difference)	16.5		23.3	

DISCUSSION

A failed test for this discharge occurs when there is a statistical difference and LC_{25} less than the IWC (Instream Waste Concentration) of 100%. The LOEL represents the lowest effluent concentration at which a statistically significant effect is observed. The LC_{25} represents an estimate of the effluent concentration that would cause a 25 percent reduction in survival. Since there was no statistically significant differences meeting this criterion, the effluent passes WET (Whole Effluent Toxicity) testing for this sampling period.

REFERENCES

1. **Hach Chemical Company.** 2008. *Hach's Water Analysis Handbook*. Fifth Edition. Hach Chemical Company, Loveland, Colorado**.** Digital Medium.
2. **APHA/AWWA/WEF.** 1998. *Standard Methods for the Examination of Water and Wastewater*. 20th Edition. American Public Health Association, Washington, D.C.
3. **USEPA.** 2002. *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms.* EPA-821-R-02-013. 335 pp.
4. **CDPHE (Colorado Department of Public Health and Environment).** 1998. *Laboratory Guidelines for Conducting Whole Effluent Toxicity Tests.* Water Quality Control Division.
5. **USEPA.** 2000. *Method of Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR Part 136). EPA/821/B-00/004.
6. **USEPA**. 2000. *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications under the National Pollutant Discharge Elimination System Program*. EPA/833/R-00/003.

Appendix 1 – Chain of Custody with Sample Receipt Forms

SEACREST GROUP
ENVIRONMENTAL SERVICES LABORATORY

CHAIN OF CUSTODY

500 S. Arthur Avenue, Unit 450 - Louisville, CO 80027
(303) 661.9324 - FAX (303) 661.9325

Client/Project Name: Linkan | Schwartzwalder Mine
P. O./Project Number:
Contact: Alex Schwiebert
Address: 2720 Ruby Vista Dr Elko, NV 89801
Phone # 775-397-6779 | E-Mail: alex.schwiebert@linkan.com
Fax # | Sampler: Bryant Acevedo
Report By: ☐ Mail ☒ PDF ☐ FAX

Analysis (Check all applicable)

Sample Location or ID	Date	Time	Grab/ Comp	Lab ID (LAB Use Only)	WET: Acute (Indicate Below)	WET: Chronic (Indicate Below)	WET: Accelerated (Indicate Below)	WET: PTI/TIE/TRE (Indicate Below)		Metals (List Below)	Solids (TS/TDS/TSS) (Circle)	Anions (List Below)	Chromium III/VI (Circle)	Oil and Grease	Coliform (Total/Fecal/E-Coli) (Circle)	BOD/COD (Circle)	Other Analysis (List Below)				Number of Containers	Total Volume
Outfall 001A	6/23/25	1330	Comp	525 317.B		X															2	2gal

Turnaround Requirements
(Analytical Testing Only)

X Standard (10 days) ____ 6-9 Day
____ 3-5 Day ____ 1-2 Day

Requested Report Date:

Test Species: ☒ Fathead Minnow ☒ Cerio daphnia ☐ Daphnia magna ☐ Daphnia pulex ☐ Other (List Below)

Special Instructions/Comments:
WET #1
Email results to as well: chris.prosper@linkan.com
adam.billin@linkan.com
peter.hays@state.co.us

Relinquished By (1)		Received By (1)		Relinquished By (2)		Received By (2)	
Signature	Date/Time	Signature	Date/Time	Signature	Date/Time	Signature	Date/Time
[signature]	6/23/25 16:00	Hannah Triele	062325 1600				

SeaCrest Group
Louisville, CO

Sample Receipt Form

Form #: 42
Effective: January 2024

Project # 525 ~~317.B~~ 317.B
Date: 06 23 25

Sample #: 1
Initials: HT

Samples Were:

1. FedEx UPS Courier Hand Delivery (circle one)
   Notes:

2. Chilled to Ship — Ambient / Chilled

3. Cooler Received Broken or Leaking — Y / N / NA
   Notes:

4. Sample Received Broken or Leaking — Y / N
   Notes:

5. Received Within 36hr Holding Time — Y / N
   Notes:

6. Aeration necessary — Y / N

7. pH adjustment necessary — Y / N

8. Sample Received at Temperature between 0-6° C . — Y / N / NA
   Notes: same day sample

9. Description of Sample (Color, Odor, and/or Presence of Particulate Matter):
   Effluent: Clear no visible P.M
   Receiving: NA
   Presence of native species: Y / N

Lab #	Temp	D.O.	pH	Cond
525 317.B,	8.7	7.6	7.9	150

Custody Seals:

1. Present on Outer Package — Y / N
2. Unbroken on Outer Package — Y / N / NA
3. Present on Sample — Y / N
4. Unbroken on Sample — Y / N / NA

Custody Documentation (Chain of Custody):

1. Present Upon Receipt of Sample — Y / N

CC

SEACREST GROUP
ENVIRONMENTAL SERVICES LABORATORY

CHAIN OF CUSTODY

500 S. Arthur Avenue, Unit 450 - Louisville, CO 80027
(303) 661.9324 - FAX (303) 661.9325

Client/Project Name: Linkan / Schwartzwalder Mine
P. O./Project Number:
Contact: Alex Schwiebert
Address: 2720 Ruby Vista Dr Elko NV 89801
Phone # 719-247-0514 E-Mail: alex.schwiebert@linkan.com
Fax # Sampler: Bryant Acevedo
Report By: ☐ Mail ☒ PDF ☐ FAX

Sample Location or ID	Date	Time	Grab/ Comp	Lab ID (LAB Use Only)	WET: Acute (Indicate Below)	WET: Chronic (Indicate Below)	WET: Accelerated (Indicate Below)	WET: PTI/TIE/TRE (Indicate Below)		Analysis (Check all applicable) Metals (List Below)	Solids (TS/TDS/TSS) (Circle)	Anions (List Below)	Chromium III/VI (Circle)	Oil and Grease	Coliform (Total/Fecal/E-Coli) (Circle)	BOD/COD (Circle)	Other Analysis (List Below)			Number of Containers	Total Volume
Outfall 001A	6/24/25	1406	Comp	525317-B#2		X														2	2gal

Turnaround Requirements (Analytical Testing Only)
X Standard (10 days) ____ 6-9 Day
____ 3-5 Day ____ 1-2 Day
Requested Report Date:

Test Species: ☐ Fathead Minnow ☐ Cerio daphnia ☐ Daphnia magna ☐ Daphnia pulex ☐ Other (List Below)

Special Instructions/Comments:
WET # Email results to: chris.prosper@linkan.com adam.billin@linkan.com peter.hays@state.co.us as well

Relinquished By (1)		Received By (1)		Relinquished By (2)		Received By (2)	
Signature	Date/Time	Signature	Date/Time	Signature	Date/Time	Signature	Date/Time
Bryant A	6/25/1500		062425 1530				

SeaCrest Group
Louisville, CO

Sample Receipt Form

Form #: 42
Effective: January 2024

Project # 525317.B Sample #: 2
Date: 062425 Initials: EW
Samples Were:
1. FedEx UPS Courier Hand Delivery (circle one)
Notes:

2. Chilled to Ship Ambient (Chilled)

3. Cooler Received Broken or Leaking Y (N) NA
Notes:

4. Sample Received Broken or Leaking Y (N)
Notes:

5. Received Within 36hr Holding Time (Y) N
Notes:

6. Aeration necessary Y (N)

7. pH adjustment necessary Y (N)

8. Sample Received at Temperature between 0-6° C . Y N (NA)
Notes: Same day

9. Description of Sample (Color, Odor, and/or Presence of Particulate Matter):
Effluent: low fine PM
Receiving: N/A
Presence of native species: Y (N)

Lab #	Temp	D.O.	pH	Cond
317.BHZ	10.5	7.2	7.8	158

Custody Seals:

1. Present on Outer Package	Y	(N)	
2. Unbroken on Outer Package	Y	N	(NA)
3. Present on Sample	Y	(N)	
4. Unbroken on Sample	Y	N	(NA)

Custody Documentation (Chain of Custody):
1. Present Upon Receipt of Sample (Y) N

SEACREST GROUP
ENVIRONMENTAL SERVICES LABORATORY

CHAIN OF CUSTODY

500 S. Arthur Avenue, Unit 450 - Louisville, CO 80027
(303) 661.9324 - FAX (303) 661.9325

Client/Project Name: Linkan | Schwartzwalder Mine
P. O./Project Number:
Contact: Alex Schwichert
Address: 2720 Ruby Vista Dr Elko, NV 89801
Phone #775-397-0379 E-Mail: alex.schwichert@linkan.com
Fax # Sampler: Bryant Acuedo
Report By: ☐ Mail ☒ PDF ☐ FAX ✓

Sample Location or ID	Date	Time	Grab/ Comp	Lab ID (Lab Use Only)	WET: Acute (Indicate Below)	WET: Chronic (Indicate Below)	WET: Accelerated (Indicate Below)	WET: PTI/TIE/TRE (Indicate Below)		Analysis (Check all applicable) Metals (List Below)	Solids (TS/TDS/TSS) (Circle)	Anions (List Below)	Chromium III/VI (Circle)	Oil and Grease	Coliform (Total/Fecal/E-Coli) (Circle)	BOD/COD (Circle)	Other Analysis (List Below)			Number of Containers	Total Volume
Outfall 001A	6/25/25	1400	Comp	525317.8#3		X														2	2gal

Turnaround Requirements (Analytical Testing Only)
X Standard (10 days) ____ 6-9 Day
____ 3-5 Day ____ 1-2 Day
Requested Report Date:

Test Species: ☐ Fathead Minnow ☐ Cerio daphnia ☐ Daphnia magna ☐ Daphnia pulex ☐ Other (List Below)

Special Instructions/Comments: Email Results to: chris.prosper@linkan.com adam.boiling@linkan.com peter.hays@state.co.us
WET #3 as well

Relinquished By (1)		Received By (1)		Relinquished By (2)		Received By (2)	
Signature	Date/Time	Signature	Date/Time	Signature	Date/Time	Signature	Date/Time
[signature]	6/25/25 1530	[signature]	062525 1620				

SeaCrest Group
Louisville, CO

Sample Receipt Form

Form #: 42
Effective: January 2024

Project # 525317.B Sample #: 3
Date: 062525 Initials: EW
Samples Were:
1. FedEx UPS Courier ~~Hand Delivery~~ (circle one)
Notes:

2. Chilled to Ship Ambient (Chilled)

3. Cooler Received Broken or Leaking Y (N) NA
Notes:

4. Sample Received Broken or Leaking Y (N)
Notes:

5. Received Within 36hr Holding Time (Y) N
Notes:

6. Aeration necessary Y (N)

7. pH adjustment necessary Y (N)

8. Sample Received at Temperature between 0-6° C . Y N (NA)
Notes: same day

9. Description of Sample (Color, Odor, and/or Presence of Particulate Matter):
Effluent: Clear, no PM
Receiving: N/A
Presence of native species: Y (N)

Lab #	Temp	D.O.	pH	Cond
317.B#3	10.6	7.8	7.8	151

Custody Seals:

1. Present on Outer Package	Y	(N)	
2. Unbroken on Outer Package	Y	N	(NA)
3. Present on Sample	Y	(N)	
4. Unbroken on Sample	Y	N	(NA)

Custody Documentation (Chain of Custody):

1. Present Upon Receipt of Sample	(Y)	N

Appendix 2 – Data Sheets for the *Ceriodaphnia dubia* Test

WET TEST REPORT FORM – CHRONIC

Permittee: Linkan Engineering-Schwartzwalder Mine
Permit No.: CO-0001244

Outfall: 001A – IWC: 100%

Test Type: Routine ☒ Accelerated ☐ Screen ☐

Test Species: *Ceriodaphnia dubia*

Test Start Time	Test Start Date	Test End Time	Test End Date
1145	06-24-2025	1205	06-30-2025

Test Results	Lethality/TCP3B	Reproduction/TKP3B
S code: LOEL	100%	100%
	PASS	**N/A**
P code: LC_{25}/IC_{25}	84.5%	84.2%
	PASS	**N/A**
T code:	100%	100%

Test Summary

Measurements	Control (0%)	20%	40%	60%	80%	100%
Exposed organisms	10	10	10	10	10	10
Survival for day 1	10	10	10	10	10	10
Survival for day 2	10	10	10	10	10	6
Survival for day 3	10	10	9	10	10	2
Survival for day 4	10	10	9	10	10	0
Survival for day 5	10	10	9	10	10	0
Survival for day 6	10	10	9	10	10	0
Mean 3 Brood Total	25.3	28.5	24.9	25.3	26.3	0.4

Hardness (mg/L) – Receiving Water: N/A Effluent: 0/0/2 Recon Water: 96
Alkalinity (mg/L) – Receiving Water: N/A Effluent: 75/79/85 Recon Water: 62
Chlorine (mg/L) – Effluent: <0.01/<0.01/0.02 pH (initial/final) – Control: 7.9/8.3 100%: 7.8/7.8
Total Ammonia as NH_3 (mg/L) - Effluent: 0.03/<0.03/<0.03

Were all Test Conditions in Conformance with Division Guidelines? YES ☒ NO ☐
If **NO**, list deviations from test specifications: N/A
Laboratory: SeaCrest Group
Comments:
Analyst's Name: Haley West, Cat Cash, Hannah Tiede, and Katie Maranowski

Signature  *Date* July 2, 2025

SeaCrest Group
Louisville, CO

Ceriodaphnia Chronic Benchsheet

Form #: 101a
Effective: March 2023

Permittee: Linkan Engineering **Lab #:** 525317.B **Site:** 001A
IWC %: 100 **Template #:** 5 **Dilution Water:** MH25-014 **Sample Date:** 062325
Age & Source: 1197 062425 **Test Start:** 062425 1145 **Test End:** 062525 1205
Test Conditions:

		0	1	2	3	4	5	6	7	Total
(C)		0	0	0	6	0	13	13		32
0		0	0	0	8	0	10	10		25
		0	0	0	6	0	11	17		34
		0	0	0	6	0	12	16		34
		0	0	0	4	0	5	8		17
		0	0	0	5	0	9	12		26
		0	0	0	4	0	10	10		24
		0	0	0	0	4	6	11		21
		0	0	0	1	0	5	12		24
		0	0	0	4	4	8	0		16
	DO	7.2	7.5	6.8	6.8	6.9	6.9	6.8	7.0	6.9
	Temp	24.8	25.8	25.5	25.3	24.1	25.9	25.7	25.8	24.1
	pH	7.9	8.2	8.0	8.0	8.1	8.2	7.9	7.7	7.9
	Cond	317	316	321	318	327	314	339		
										25.3
(1)		0	0	0	8	0	9	12		29
20		0	0	0	6	0	9	13		28
		0	0	0	3	0	6	14		23
		0	0	0	5	0	10	12		29
		0	0	0	4	0	10	10		24
		0	0	0	7	0	10	15		32
		0	0	0	7	0	11	14		32
		0	0	0	4+3	0	10	14		31
		0	0	0	4	0	10	13		27
		0	0	0	8	0	8	16		30
	DO	7.1	7.5	6.8	6.8	7.2	6.9	6.8	7.0	7.1
	Temp	24.8	25.8	25.5	25.3	24.9	25.9	25.7	25.8	24.1
	pH	7.8	8.0	7.9	8.0	8.1	8.2	7.9	7.9	7.9
	Cond	287	288	298	297	298	287	310		
										28.5
(2)		0	0	0	0	6	11	15		~~25~~ 32
40		0	0	0	7	0	14	18		39
		0	0	0	4	0	10	14		28
		0	0	0	6	0	9	11		26
		0	0	0	3	0	10	13		26
		0	0	0	0 D					0 D
		0	0	0	5	0	11	13		29
		0	0	0	4	0	9	12		25
		0	0	0	4	0	9	11		24
		0	0	0	3	4	11	0		18
	DO	7.0	7.6	6.9	6.7	7.4	6.9	6.8	7.1	7.3
	Temp	24.8	25.8	25.5	25.3	24.9	25.9	25.7	25.8	24.1
	pH	7.8	8.3	7.8	8.1	8.1	8.3	8.0	8.0	7.8
	Cond	259	259	270	270	268	256	275		
										24.9
(3)		0	0	0	7	0	10	9		26
60		0	0	0	6	0	10	12		28
		0	0	0	4	0	12	14		30
		0	0	0	4	0	9	15		28
		0	0	0	4	0	5	13		22
		0	0	0	6	0	14	15		35
		0	0	0	4	0	7	10		21
		0	0	0	3	0	11	13		27
		0	0	0	4	0	7	11		22
		0	0	0	3	7	3+3	0		16
	DO	7.1	7.7	6.9	6.7	7.0	6.9	6.9	7.1	7.5
	Temp	24.8	25.8	25.5	25.3	25.1	25.9	25.7	25.8	24.1
	pH	7.7	8.3	7.8	8.2	8.0	8.4	8.0	8.1	7.8
	Cond	232	230	238	238	233	227	248		
										25.3

CC

SeaCrest Group
Louisville, CO

Ceriodaphnia Chronic Benchsheet

Form #: 101a
Effective: March 2023

	0	1	2	3	4	5	6	7	Total
(4)	0	0	0	4	0	9	12		25
	0	0	0	5	0	10	16		31
	0	0	0	0	0	10	10		20
	0	0	0	4	0	10	11		25
	0	0	0	5	0	12	13		30
80	0	0	0	5	0	11	13		29
	0	0	0	0	4	8	12		22
	0	0	0	0	3	10	14		27
	0	0	0	0	0	5	13		27
	0	0	0	0	S+2	7	13		27
DO	7.1	7.8 | 6.8	6.5 | 7.8	6.9 | 6.9	7.2 | 7.7	7.7 | 7.5	8.1		
Temp	24.8	25.9 | 26.5	25.3 | 25.3	25.9 | 25.7	25.8 | 24.1	25.9 | 25.9	26.5		26.3
pH	7.7	8.4 | 7.7	8.2 | 8.0	8.5 | 8.0	8.2 | 7.8	8.3 | 7.7	8.6		
Cond	1829	1858	190	190	185	193	223		
(5)	0	0	0	0	1 D				1 D
	0	0	0	0	3 D				3 D
	0	0	0 D						0 D
	0	0	0 D						0 D
	0	0	0 D						0 D
100	0	0	0	4 D					4 D
	0	0	0	0 D					0 D
	0	0	0	0 D					0 D
	0	0	0	0 D					0 D
	0	0	0 D						0 D
DO	7.2	7.9 | 6.9	6.4 | 8.0	6.9 | 6.9	7.2 | 7.9	7.8			
Temp	24.8	25.9 | 26.5	25.3 | 25.3	25.9 | 25.7	25.8 | 24.1	25.9			0.4
pH	7.8	8.5 | 7.8	8.3 | 8.0	8.5 | 8.1	8.3 | 7.8	7.9			
Cond	1531	1549	154	156	155	78			
Algae	ABS	ABS	ABS	ABS	ABS	ABS	ABS		
YCT	2SO4	2SO4	2SO4	2SO4	2SO4	2SO4	2SO4		
H_2O		2			3	3			
Initials	KM	KM	CC	HW	HT	KM	KM		

	Eff #1	Eff #2	Eff #3	Recon
Hardness	0	0	0	96
Alkalinity	15	19	18	102
Chlorine	<0.01	<0.01	0.02	<0.01
Ammonia	0.03	<0.03	<0.03	<0.03

Exposure Chamber:
Total Capacity: 30mL
Total Solution Volume: 15mL

Feeding Schedule:
Fed daily
Food used: YCT, Algae

Units:
DO: mg/L Hardness: mg/L
Temp: °C Alkalinity: mg/L
pH: N/A Chlorine: mg/L
Cond: µS/cm³ Ammonia: mg/L

Comments:

x:y:z = board #:row:column

1	2	3	4	5	6	7	8	9	10
A1	A3	A4	A5	A6	A8	A9	C2	C6	C7

CC

CETIS Analytical Report

Report Date: 30 Jun-25 15:55 (p 1 of 1)
Test Code/ID: 525317cd / 11-5089-2388

Ceriodaphnia 7-d Survival and Reproduction Test **SeaCrest Group**

Analysis ID:	06-7225-8130	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.6
Analyzed:	30 Jun-25 15:54	**Analysis:**	STP 2xK Contingency Tables	**Status Level:**	1
Edit Date:	30 Jun-25 0:00	**MD5 Hash:**	26D148ECA29703B9A09023057D92E2A4	**Editor ID:**	000-346-492-2
Batch ID:	19-1490-5435	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	24 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:**

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	80	100	89.44	1.2

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water		20	1.0000	Exact	1.0000	Non-Significant Effect
		40	0.5000	Exact	1.0000	Non-Significant Effect
		60	1.0000	Exact	1.0000	Non-Significant Effect
		80	1.0000	Exact	1.0000	Non-Significant Effect
		100*	0.0000	Exact	2.7E-05	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	D	10	0	10	1.0000	0.0000	0.00%
20		10	0	10	1.0000	0.0000	0.00%
40		9	1	10	0.9000	0.1000	10.00%
60		10	0	10	1.0000	0.0000	0.00%
80		10	0	10	1.0000	0.0000	0.00%
100		0	10	10	0.0000	1.0000	100.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
20		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
40		10	0.9000	0.6738	1.0000	1.0000	0.0000	1.0000	0.1000	35.14%	10.00%
60		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
80		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

CETIS Analytical Report

Report Date: 30 Jun-25 15:55 (p 1 of 2)
Test Code/ID: 525317cd / 11-5089-2388

Ceriodaphnia 7-d Survival and Reproduction Test **SeaCrest Group**

Analysis ID:	00-9292-1898	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.6
Analyzed:	30 Jun-25 15:54	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	30 Jun-25 0:00	**MD5 Hash:**	26D148ECA29703B9A09023057D92E2A4	**Editor ID:**	000-346-492-2
Batch ID:	19-1490-5435	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	24 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:**

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2140199	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	1	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	82.41	81.11	83	1.2	1.2	1.2
LC20	83.45	82.22	84	1.2	1.2	1.2
LC25	84.48	83.33	85	1.2	1.2	1.2
LC40	87.59	86.67	88	1.1	1.1	1.2
LC50	89.66	88.89	90	1.1	1.1	1.1

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	D	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
20		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
40		10	0.9000	1.0000	0.0000	1.0000	35.14%	10.00%	9/10	0.9667	3.33%
60		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9667	3.33%
80		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	0.9667	3.33%
100		10	0.0000	0.0000	0.0000	0.0000	---	100.00%	0/10	0.0000	100.00%

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

CETIS Analytical Report

Report Date: 30 Jun-25 15:55 (p 1 of 1)
Test Code/ID: 525317cd / 11-5089-2388

Ceriodaphnia 7-d Survival and Reproduction Test — SeaCrest Group

Analysis ID:	21-0611-3581	**Endpoint:**	Reproduction	**CETIS Version:**	CETIS v2.1.6
Analyzed:	30 Jun-25 15:54	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	30 Jun-25 0:00	**MD5 Hash:**	01EF4325381070C52D74167D967455C4	**Editor ID:**	000-346-492-2
Batch ID:	19-1490-5435	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	24 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD	Age:
Untransformed	C > T	80	100	89.44	1.2	5.885	23.26%	

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Dilution Water		20	18	119	75	2	CDF	0.9875	Non-Significant Effect
		40	18	111.5	75	4	CDF	0.9403	Non-Significant Effect
		60	18	108	75	3	CDF	0.8923	Non-Significant Effect
		80	18	113	75	1	CDF	0.9548	Non-Significant Effect
		100*	18	55	75	0	CDF	0.0004	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	25.3	15	>>	Yes	Passes Criteria
PMSD	0.2326	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5572.08	1114.42	5	33.73	<1.0E-05	Significant Effect
Error	1784.1	33.0389	54			
Total	7356.18		59			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	39.62	15.09	<1.0E-05	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8851	0.9459	3.9E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	25.3	20.69	29.91	24.5	16	34	2.039	25.48%	0.00%
20		10	28.5	26.28	30.72	29	23	32	0.9804	10.88%	-12.65%
40		10	24.9	17.53	32.27	27	0	39	3.257	41.37%	1.58%
60		10	25.3	21.5	29.1	26	16	35	1.68	21.00%	0.00%
80		10	26.3	23.84	28.76	27	20	31	1.086	13.06%	-3.95%
100		10	0.4	-0.2911	1.091	0	0	3	0.3055	241.52%	98.42%

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

CETIS Analytical Report

Report Date: 30 Jun-25 15:55 (p 2 of 2)
Test Code/ID: 525317cd / 11-5089-2388

Ceriodaphnia 7-d Survival and Reproduction Test **SeaCrest Group**

Analysis ID:	18-8463-6412	**Endpoint:**	Reproduction	**CETIS Version:**	CETIS v2.1.6
Analyzed:	30 Jun-25 15:54	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	30 Jun-25 0:00	**MD5 Hash:**	01EF4325381070C52D74167D967455C4	**Editor ID:**	000-346-492-2
Batch ID:	19-1490-5435	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	24 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:**

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1115090	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	25.3	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	82.1	38.35	83.07	1.2	1.2	2.6
IC20	83.17	80.62	84.09	1.2	1.2	1.2
IC25	84.24	81.86	85.12	1.2	1.2	1.2
IC40	87.46	85.58	88.19	1.1	1.1	1.2
IC50	89.6	88.07	90.24	1.1	1.1	1.1

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	D	10	25.3	24.5	16	34	25.48%	0.00%	26.9	0.00%
20		10	28.5	29	23	32	10.88%	-12.65%	26.9	0.00%
40		10	24.9	27	0	39	41.37%	1.58%	25.5	5.20%
60		10	25.3	26	16	35	21.00%	0.00%	25.5	5.20%
80		10	26.3	27	20	31	13.06%	-3.95%	25.5	5.20%
100		10	0.4	0	0	3	241.52%	98.42%	0.4	98.51%

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

Appendix 3 – Data Sheets for the Fathead Minnow Test

WET TEST REPORT FORM – CHRONIC

Permittee: Linkan Engineering-Schwartzwalder Mine

Permit No.: CO-0001244

Outfall: 001A – IWC: 100%

Test Type: Routine ☒ Accelerated ☐ Screen ☐

Test Species: fathead minnow

Test Start Time	Test Start Date	Test End Time	Test End Date
1620	06-23-2025	1520	06-30-2025

Test Results	Lethality/TCP6C	Growth/TKP6C
S code: LOEL	>100%	100%
	PASS	**N/A**
P code: LC_{25}/IC_{25}	99.5%	87%
	PASS	**N/A**
T code:	>100%	100%

Test Summary

Measurements	Control (0%)	12.5%	25%	50%	75%	100%
Exposed organisms	40	40	40	40	40	40
Survival for day 1	40	40	40	40	40	40
Survival for day 2	40	40	40	40	40	40
Survival for day 3	40	40	40	40	40	39
Survival for day 4	40	39	40	39	39	38
Survival for day 5	40	38	40	39	39	33
Survival for day 6	40	38	39	39	39	30
Survival for day 7	39	38	39	39	39	29
Mean Dry Wt. (mg)	0.587	0.586	0.565	0.562	0.553	0.233

Hardness (mg/L) – Receiving Water: N/A Effluent: 0/0/2 Recon Water: 100

Alkalinity (mg/L) – Receiving Water: N/A Effluent: 75/79/85 Recon Water: 63

Chlorine (mg/L) – Effluent: <0.01/<0.01/0.02 pH (initial/final) – Control: 8.1/7.6 100%: 7.9/7.8

Total Ammonia as NH_3 (mg/L) -Effluent: 0.03/<0.03/<0.03

Were all Test Conditions in Conformance with Division Guidelines? YES ☒ NO ☐

If **NO**, list deviations from test specifications: N/A

Laboratory: SeaCrest Group

Comments:

Analyst's Name: Cat Cash, Ethan White, and Hannah Tiede

Signature *Date* July 2, 2025

SeaCrest Group
Louisville, CO

Form #: 103a
Effective: March 202

Fathead Minnow Chronic Benchsheet

Client: Linkan Engineering Site: 001A Lab #: 525317.18 Sample Date: Oct 2025 IWC: 100 Dilution H_2O: Moss-043
Test Start: 10/22/25 10:20 Test End: 10/30/25 15:20 Species Info: FHM Template: Oct2025 Test Conditions:

Conc	Read	0	1	2	3	4	5	6	7	#	Fish & Tare	Tare	Fish Wt mg	Ave wt
0	DO	7.2	4.4	4.9	4.6	4.3	4.6	4.2	4.4	#1	1.05892	1.07418	0.0144	0.0510
	Temp	24.1	24.5	24.1	24.9	24.1	25.0	24.8	25.1	#2	1.07461	1.07391	0.0710	
	pH	8.1	7.6	8.0	7.8	8.1	7.7	8.2	7.9	#3	1.08333	1.07784	0.0549	
	Cond	273	320		316	314	306	311	314	#4	1.08138	1.07634	0.0504	
20	DO	7.3	4.3	4.3	4.8	4.4	4.7	4.3	4.4	#5	1.07247	1.06656	0.0591	0.0550
	Temp	24.1	24.5	24.3	24.9	24.4	25.0	24.7	25.1	#6	1.09018	1.08404	0.0614	
	pH	8.1	7.6	8.0	7.8	8.0	7.7	7.6	7.8	#7	1.07861	1.07294	0.0515	
	Cond	299	246		292	288	292	285	292	#8	1.07574	1.07010	0.0564	
40	DO	7.4	4.2	4.3	4.3	4.4	4.6	4.2	4.4	#9	1.07834	1.07199	0.0635	0.0585
	Temp	24.1	24.5	24.4	25.0	24.8	24.6	24.1	25.0	#10	1.08354	1.07551	0.0553	
	pH	8.0	7.6	7.9	7.8	8.0	7.7	7.8	8.0	#11	1.08398	1.07840	0.0558	
	Cond	246	240		270	233	239	242		#12	1.07928	1.07384	0.0544	
60	DO	7.5	4.0	4.3	4.1	4.5	4.5	4.5	4.6	#13	1.07460	1.06890	0.0570	0.0605
	Temp	24.1	24.5	24.5	25.0	25.2	24.7	24.1	25.0	#14	1.08438	1.07912	0.0526	
	pH	7.9	7.7	7.8	7.8	7.9	7.7	7.9	7.8	#15	1.07763	1.07153	0.0610	
	Cond	213	214		216	206	210	210		#16	1.07395	1.06794	0.0600	
80	DO	7.0	3.9	4.4	4.6	4.1	4.5	4.7	4.8	#17	1.07101	1.06500	0.0601	0.0550
	Temp	24.1	24.5	24.6	25.1	25.0	24.7	24.1	25.0	#18	1.07656	1.07055	0.0601	
	pH	7.8	7.7	7.7	7.8	7.8	7.8	7.8	7.8	#19	1.09321	1.08272	0.0541	
	Cond	181	183		187	177	182	187	199	#20	1.07648	1.07081	0.0567	
100	DO	7.0	3.8	3.7	4.5	4.6	4.3	4.3	4.7	#21	1.07461	1.07240	0.0722	0.0620
	Temp	24.1	24.5	24.8	25.1	25.9	24.7	24.1	25.0	#22	1.07887	1.07034	0.0785	
	pH	7.9	7.7	7.7	7.8	7.8	7.8	7.8	7.7	#23	1.07501	1.07193	0.0306	
	Cond	150	152		158	149	151	156	163	#24	1.08435	1.06832	0.0760	
	DO									#				
	Temp									#				
	pH									#				
	Cond									#				

	Eff 1	Eff 2	Eff 3	Recon	Rcv 1	Rcv 2	Rcv 3	MR
Initials	CC		EW		EW		EW	
Water #	1		1		2		3	2

Exposure Chamber
Total Capacity: 500 mL
Test Solution Volume: 250 mL
Test Solution Surface Area: 50.2 cm
Water Depth (constant): 6.5 cm

Units:
DO: mg/L Hard: mg/L
Temp: °C Alk: mg/L
pH: N/A Chlor: mg/L
Cond: µS/cm³ NH_3: mg/L

	0	1	2	3	4	5	6	7
Hard	0	7	100					
Alk	15	79	85	103				
Chlor	0.01	0.02	<0.01					
NH_3	0.03	0.03	<0.03					

Feeding Schedule
Fed: 2x per day
Food Used: <24hr artemia

Feeding	0	1	2	3	4	5	6	7
AM		✓	✓	✓	✓	✓	✓	✓
Initials		✓	EW	EW	EW	EW	HT	HT
PM		✓	✓	✓	✓	✓	✓	✓
Initials		CC	EW	EW	EW	EW	EW	HT

pretest # 1.05475 1.05431

Comments:

CETIS Analytical Report

Report Date: 01 Jul-25 12:34 (p 1 of 2)
Test Code/ID: 525317fhm / 14-7334-1503

Fathead Minnow 7-d Larval Survival and Growth Test **SeaCrest Group**

Analysis ID:	00-4636-1892	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.6
Analyzed:	01 Jul-25 12:34	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Edit Date:	01 Jul-25 0:00	**MD5 Hash:**	5178D78A35C73433301782BCC17BE66C	**Editor ID:**	000-346-492-2
Batch ID:	01-7884-4059	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	23 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Test Length:	7d 0h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:**

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.1507	15.46%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Dilution Water		20	6	16	10	2	CDF	0.6105	Non-Significant Effect
		40	6	18	10	2	CDF	0.8333	Non-Significant Effect
		60	6	18	10	2	CDF	0.8333	Non-Significant Effect
		80	6	18	10	2	CDF	0.8333	Non-Significant Effect
		100	6	12.5	10	1	CDF	0.1834	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**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	0.337039	0.0674078	5	3.596	0.0198	Significant Effect
Error	0.337422	0.0187457	18			
Total	0.674461		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	9.263	15.09	0.0990	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8289	0.884	0.0009	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%
20		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	2.56%
40		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
60		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
80		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
100		4	0.7250	0.3722	1.0000	0.7000	0.5000	1.0000	0.1109	30.58%	25.64%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.3710	1.2420	1.5010	1.4120	1.2490	1.4120	0.0407	5.94%	0.00%
20		4	1.3310	1.1810	1.4800	1.3310	1.2490	1.4120	0.0471	7.07%	2.97%
40		4	1.3710	1.2420	1.5010	1.4120	1.2490	1.4120	0.0407	5.94%	0.00%
60		4	1.3710	1.2420	1.5010	1.4120	1.2490	1.4120	0.0407	5.94%	0.00%
80		4	1.3710	1.2420	1.5010	1.4120	1.2490	1.4120	0.0407	5.94%	0.00%
100		4	1.0480	0.6059	1.4890	0.9966	0.7854	1.4120	0.1388	26.50%	23.60%

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

CETIS Analytical Report

Report Date: 01 Jul-25 12:34 (p 1 of 2)
Test Code/ID: 525317fhm / 14-7334-1503

Fathead Minnow 7-d Larval Survival and Growth Test **SeaCrest Group**

Analysis ID:	06-6049-6880	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETIS v2.1.6
Analyzed:	01 Jul-25 12:34	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	01 Jul-25 0:00	**MD5 Hash:**	5178D78A35C73433301782BCC17BE66C	**Editor ID:**	000-346-492-2
Batch ID:	01-7884-4059	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	23 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Test Length:	7d 0h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:**

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	579220	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.975	0.8	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
LC15	91.49	82.25	---	1.1	---	1.2
LC20	95.49	84.13	---	1	---	1.2
LC25	99.49	85.7	---	1	---	1.2
LC40	>100	---	---	<1	---	---
LC50	>100	---	---	<1	---	---

7d Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**ΣA/ΣB**	**Mean**	**%Effect**
0	D	4	0.9750	1.0000	0.9000	1.0000	5.13%	0.00%	39/40	0.9750	0.00%
20		4	0.9500	0.9500	0.9000	1.0000	6.08%	2.56%	38/40	0.9688	0.64%
40		4	0.9750	1.0000	0.9000	1.0000	5.13%	0.00%	39/40	0.9688	0.64%
60		4	0.9750	1.0000	0.9000	1.0000	5.13%	0.00%	39/40	0.9688	0.64%
80		4	0.9750	1.0000	0.9000	1.0000	5.13%	0.00%	39/40	0.9688	0.64%
100		4	0.7250	0.7000	0.5000	1.0000	30.58%	25.64%	29/40	0.7250	25.64%

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

CETIS Analytical Report

Report Date: 01 Jul-25 12:38 (p 1 of 1)
Test Code/ID: 525317fhm / 14-7334-1503

Fathead Minnow 7-d Larval Survival and Growth Test — SeaCrest Group

Analysis ID:	17-5089-0904	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETIS v2.1.6
Analyzed:	01 Jul-25 12:34	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Edit Date:	01 Jul-25 0:00	**MD5 Hash:**	C2529A1E80770A100269DEC1F360114B	**Editor ID:**	000-346-492-2
Batch ID:	01-7884-4059	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	23 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Test Length:	7d 0h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD	Age:
Untransformed	C > T	80	100	89.44	1.2	0.09674	16.49%	

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Dilution Water		20	6	0.01876	2.407	0.09674	CDF	0.8278	Non-Significant Effect
		40	6	0.5537	2.407	0.09674	CDF	0.6240	Non-Significant Effect
		60	6	0.6221	2.407	0.09674	CDF	0.5934	Non-Significant Effect
		80	6	0.8524	2.407	0.09674	CDF	0.4883	Non-Significant Effect
		100*	6	8.809	2.407	0.09674	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	0.5868	0.25	>>	Yes	Passes Criteria
PMSD	0.1649	0.12	0.3	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.383565	0.076713	5	23.75	<1.0E-05	Significant Effect
Error	0.0581447	0.0032303	18			
Total	0.44171		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.105	15.09	0.2961	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.986	0.884	0.9766	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	0.5868	0.5193	0.6542	0.5795	0.544	0.644	0.0212	7.22%	0.00%
20		4	0.586	0.5515	0.6205	0.583	0.564	0.614	0.01085	3.70%	0.13%
40		4	0.5645	0.4119	0.7171	0.5705	0.442	0.675	0.04796	16.99%	3.79%
60		4	0.5617	0.491	0.6325	0.5575	0.522	0.61	0.02223	7.91%	4.26%
80		4	0.5525	0.4853	0.6197	0.554	0.501	0.601	0.02111	7.64%	5.84%
100		4	0.2327	0.1302	0.3353	0.236	0.151	0.308	0.03223	27.69%	60.33%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.644	0.57	0.589	0.544
20		0.591	0.614	0.575	0.564
40		0.675	0.583	0.558	0.442
60		0.61	0.526	0.522	0.589
80		0.601	0.501	0.541	0.567
100		0.229	0.151	0.308	0.243

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

CETIS Analytical Report

Report Date: 01 Jul-25 12:38 (p 1 of 1)
Test Code/ID: 525317fhm / 14-7334-1503

Fathead Minnow 7-d Larval Survival and Growth Test **SeaCrest Group**

Analysis ID:	11-9556-5134	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETIS v2.1.6
Analyzed:	01 Jul-25 12:34	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Edit Date:	01 Jul-25 0:00	**MD5 Hash:**	C2529A1E80770A100269DEC1F360114B	**Editor ID:**	000-346-492-2
Batch ID:	01-7884-4059	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	23 Jun-25	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	30 Jun-25	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Test Length:	7d 0h	**Taxon:**	Actinopterygii	**Source:**	In-House Culture **Age:**

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1401857	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.5868	0.25	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	83.36	78.61	85.75	1.2	1.2	1.3
IC20	85.2	80.8	87.67	1.2	1.1	1.2
IC25	87.03	82.8	89.66	1.1	1.1	1.2
IC40	92.54	88.4	96.62	1.1	1	1.1
IC50	96.21	91.75	101.7	1	1	1.1

Mean Dry Biomass-mg Summary

			Calculated Variate						Isotonic Variate	
Conc-%	**Code**	**Count**	**Mean**	**Median**	**Min**	**Max**	**CV%**	**%Effect**	**Mean**	**%Effect**
0	D	4	0.5868	0.5795	0.544	0.644	7.22%	0.00%	0.5868	0.00%
20		4	0.586	0.583	0.564	0.614	3.70%	0.13%	0.586	0.13%
40		4	0.5645	0.5705	0.442	0.675	16.99%	3.79%	0.5645	3.79%
60		4	0.5617	0.5575	0.522	0.61	7.91%	4.26%	0.5617	4.26%
80		4	0.5525	0.554	0.501	0.601	7.64%	5.84%	0.5525	5.84%
100		4	0.2327	0.236	0.151	0.308	27.69%	60.33%	0.2327	60.33%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.644	0.57	0.589	0.544
20		0.591	0.614	0.575	0.564
40		0.675	0.583	0.558	0.442
60		0.61	0.526	0.522	0.589
80		0.601	0.501	0.541	0.567
100		0.229	0.151	0.308	0.243

Convergent Rounding (4 sf) CETIS™ v2.1.6.2 x64 (000-346-492-2) Analyst: EW QA: CC

Appendix 4 – QA/QC and Reference Toxicant Test Chart

Quality Assurance Check List – Chronic Whole Effluent Toxicity Test

Client:	Linkan Engineering-Schwartzwalder Mine
SeaCrest Sample No:	525317.B
Species Tested:	*Ceriodaphnia dubia* and fathead minnow

Sample Dates	**Start Date of Test (*Ceriodaphnia dubia)***	**Start Date of Test (fathead minnow)**
06-23-2025		
06-24-2025		
06-25-2025	06-24-2025	06-23-2025

Sample received in lab properly preserved (0-6°C)?	**N***
Sample received at laboratory within 36 hours of collection?	**Y**
Sample delivered on ice or equivalent?	**Y**
Test initiated within 36-hours of collection?	**Y**
Test protocol conforms to CDPHE guidelines (*Ceriodaphnia dubia)*?	**Y**
Test protocol conforms to CDPHE guidelines (fathead minnow)?	**Y**
Average test temp. ±1°C (*Ceriodaphnia dubia*)?	**Y**
Average test temp. ±1°C (fathead minnow)?	**Y**
DO level ≥4.0mg/L; no super-saturation (*Ceriodaphnia dubia*)?	**Y**
DO level ≥4.0mg/L; no super-saturation (fathead minnow)?	**Y**
Survival in control ≥80% (*Ceriodaphnia dubia*)?	**Y**
Survival in control ≥80% (fathead minnow)?	**Y**
Ceriodaphnia dubia neonates <24-hours old?	**Y**
Fathead minnow larvae <24-hours old?	**Y**
Appropriate reference toxicity test conducted?	**Y**
Reference toxicity test results within the confidence limits for the lab?	**Y**

* The samples were received at 8.7°C, 10.5°C and 10.8°C on the same day as sampling.

Author *Date* July 2, 2025

Position: Aquatic Toxicologist II

Quality Control *Date* July 2, 2025

SEACREST GROUP
ENVIRONMENTAL SERVICES LABORATORY

METHOD QC

Method	Analyte	Date	LCS (rec)	%REC	%RPD	QC LIMITS
2320 B	Alkalinity - Total	5/8/2025	104.80%	100.19%	-0.74%	± 5.00%
2320 B	Alkalinity - Total	5/14/2025	104.80%	100.97%	2.79%	± 5.00%
2320 B	Alkalinity - Total	5/22/2025	104.00%	101.03%	0.84%	± 5.00%
2320 B	Alkalinity - Total	5/28/2025	103.60%	101.97%	-1.92%	± 5.00%
4500 NH_3 D	Ammonia	5/7/2025	96.60%	99.77%	1.01%	± 10.00%
4500 NH_3 D	Ammonia	5/14/2025	96.00%	95.17%	0.80%	± 10.00%
4500 NH_3 D	Ammonia	5/23/2025	104.00%	95.80%	-2.26%	± 10.00%
4500 NH_3 D	Ammonia	5/27/2025	95.00%	97.84%	-2.17%	± 10.00%
4500 Cl D	Chlorine	5/29/2025	97.48%	100.00%	0.00%	± 5.00, ± 20.00%
2340 B	Hardness - Total	5/9/2025	96.49%	102.97%	-2.32%	± 5.00%
2340 B	Hardness - Total	5/16/2025	96.50%	103.00%	4.72%	± 5.00%
2340 B	Hardness - Total	5/23/2025	95.00%	103.00%	-1.83%	± 5.00%
2340 B	Hardness - Total	5/29/2025	103.51%	98.14%	-1.12%	± 5.00%

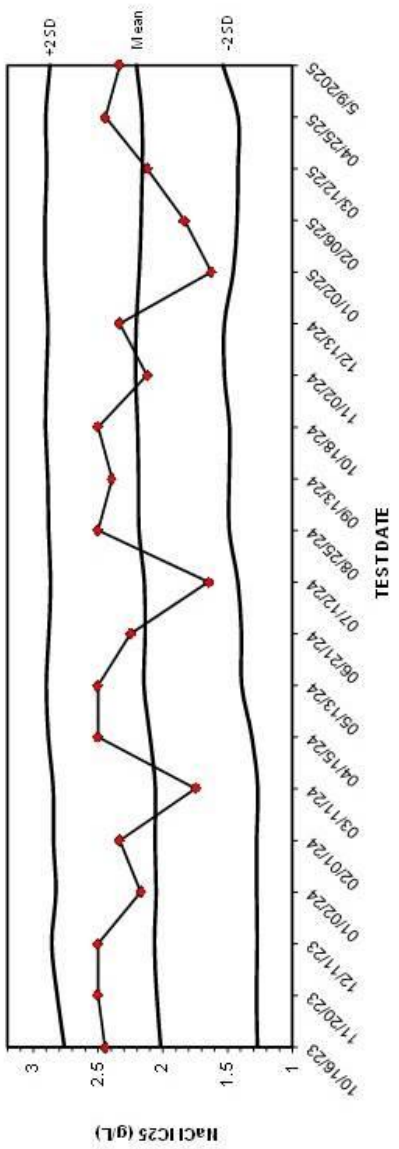
			LCS (rec)	%REC M1	%REC M2	QC Limits
4500 O	DO - Winkler	5/8/2025	N/A	100.00%	98.57%	± 5.00%
4500 O	DO - Winkler	5/16/2025	N/A	95.77%	98.55%	± 5.00%
4500 O	DO - Winkler	5/24/2025	N/A	95.77%	98.55%	± 5.00%
4500 O	DO - Winkler	5/30/2025	N/A	98.68%	96.00%	± 5.00%

			Blank	%REC MR S	%RPD	QC Limits
2540 D	Suspended Solids (TTL)	5/26/2025	100.00%	108.11%	0.00%	± 15%
2540 C	Dissolved Solids (TTL)	5/26/2025	100.00%	114.50%	0.00%	± 15%

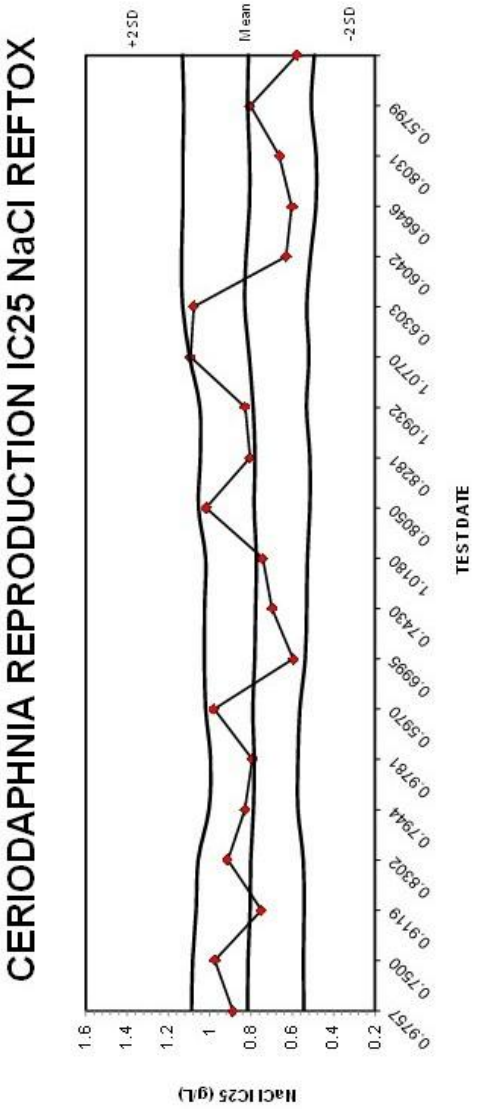
Signature: Haley West
Date: June 2, 2025

Signature: Cat Cash
Date: June 2, 2025

CERIODAPHNIA SURVIVAL LC25 NaCl REFTOX

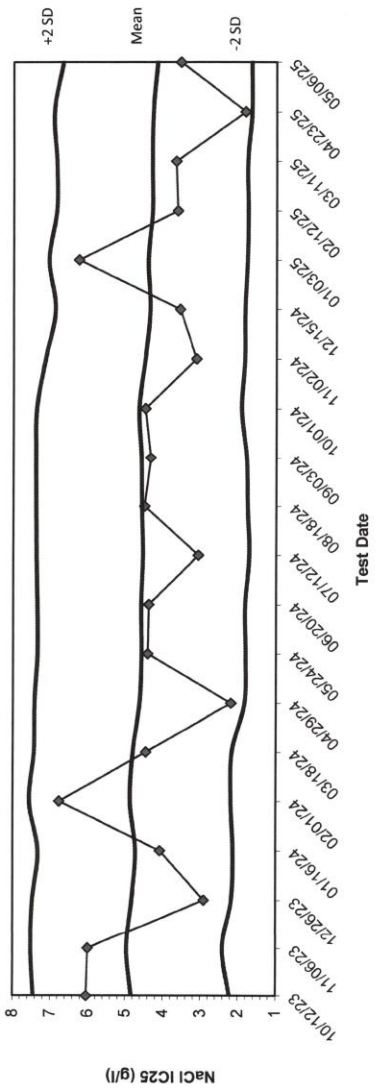


Date	LC25	Mean	-2 SD	+2 SD
10/16/23	2.4480	2.0158	1.2703	2.7613
11/20/23	2.5000	2.0476	1.2784	2.8168
12/11/23	2.5000	2.0655	1.2717	2.8592
01/02/24	2.1720	2.0518	1.2767	2.8269
02/01/24	2.3330	2.0617	1.2774	2.8460
03/11/24	1.7500	2.0578	1.2678	2.8477
04/15/24	2.5000	2.0995	1.3131	2.8858
05/13/24	2.5000	2.1471	1.3927	2.9014
06/21/24	2.2500	2.1378	1.3941	2.8816
07/12/24	1.6500	2.1444	1.4215	2.8672
08/25/24	2.5000	2.1860	1.4885	2.8836
09/13/24	2.3930	2.1889	1.4883	2.8895
10/18/24	2.5000	2.1968	1.4857	2.9080
11/02/24	2.1250	2.2130	1.5260	2.8999
12/13/24	2.3330	2.2075	1.5266	2.8884
01/02/25	1.6250	2.1835	1.4569	2.9100
02/06/25	1.8330	2.1695	1.4273	2.9118
03/12/25	2.1250	2.1596	1.4210	2.8983
04/25/25	2.4440	2.1628	1.4197	2.9059
5/9/2025	2.3330	2.2054	1.5383	2.8726



Date	IC25	Mean	-2 SD	+2 SD
10/16/23	0.8875	0.8164	0.5450	1.0878
11/20/2023	0.9757	0.81499255	0.547401472	1.082583628
12/11/23	0.7500	0.8049	0.5440	1.0658
01/02/24	0.9119	0.8019	0.5477	1.0560
02/01/24	0.8302	0.7888	0.5736	1.0040
03/11/24	0.7944	0.7848	0.5734	0.9962
04/15/24	0.9781	0.7923	0.5644	1.0202
05/13/24	0.5970	0.7824	0.5384	1.0265
06/21/24	0.6995	0.7784	0.5315	1.0252
07/12/24	0.7430	0.7741	0.5279	1.0202
08/25/24	1.0180	0.7853	0.5160	1.0545
09/13/24	0.8050	0.7810	0.5161	1.0458
10/18/24	0.8281	0.7901	0.5324	1.0478
11/02/24	1.0932	0.8090	0.5208	1.0972
12/13/24	1.0770	0.8310	0.5311	1.1309
01/02/25	0.6303	0.8248	0.5133	1.1362
02/06/25	0.6042	0.8080	0.4866	1.1295
03/12/25	0.6646	0.8078	0.4860	1.1297
04/25/25	0.8031	0.8175	0.5094	1.1256
05/09/25	0.5799	0.8135	0.4950	1.1321

FHM SURVIVAL LC25 NaCl REFTOX



Date	IC25	Mean	-2 SD	+2 SD
10/12/23	6.0360	4.8354	2.2221	7.4487
11/06/23	6.0000	4.9627	2.4111	7.5142
12/26/23	2.9120	4.8223	2.1721	7.4725
01/16/24	4.0800	4.7287	2.1284	7.3289
02/01/24	6.7670	4.8732	2.1868	7.5596
03/18/24	4.4550	4.7999	2.1625	7.4374
04/29/24	2.1900	4.6245	1.8268	7.4222
05/24/24	4.4090	4.5749	1.8037	7.3461
06/20/24	4.3800	4.5839	1.8168	7.3510
07/12/24	3.0670	4.5415	1.7090	7.3739
08/18/24	4.5000	4.5714	1.7560	7.3867
09/03/24	4.3333	4.5865	1.7805	7.3926
10/01/24	4.4760	4.6480	1.9181	7.3779
11/02/24	3.1230	4.4893	1.8336	7.1450
12/15/24	3.5620	4.3567	1.8292	6.8841
01/03/25	6.2500	4.4135	1.7718	7.0552
02/12/25	3.6250	4.3019	1.7493	6.8545
03/11/25	3.6670	4.3085	1.7635	6.8534
04/23/25	1.8150	4.2837	1.6502	6.9172
05/06/25	3.5380	4.1641	1.6533	6.6748

Date	IC25	Mean	-2 SD	+2 SD
10/12/23	6.1750	6.0363	4.0372	8.0354
11/06/23	6.6360	6.0352	4.0375	8.0330
12/26/23	4.0036	5.8797	3.7796	7.9799
01/16/24	4.5690	5.7497	3.6808	7.8186
02/01/24	5.4310	5.6958	3.6572	7.7345
03/18/24	6.2100	5.6820	3.6624	7.7017
04/29/24	3.5807	5.6121	3.4072	7.8170
05/24/24	3.3150	5.5507	3.1637	7.9377
06/20/24	4.4150	5.5436	3.1435	7.9437
07/12/24	3.4180	5.4037	2.8641	7.9433
08/18/24	6.4180	5.4925	2.9474	8.0376
09/03/24	4.9290	5.4628	2.9061	8.0194
10/01/24	4.6060	5.3852	2.8281	7.9423
11/02/24	3.3070	5.1862	2.6657	7.7066
12/15/24	3.4660	5.0417	2.4899	7.5935
01/03/25	6.1720	5.0062	2.5449	7.4674
02/12/25	3.3550	4.8745	2.3681	7.3809
03/11/25	3.6790	4.8385	2.2844	7.3927
04/23/25	2.3840	4.6342	2.0116	7.2567
05/06/25	5.9270	4.6037	2.0618	7.1455

Permits and Enforcement Section
Water Quality Control Division
CPDHE
4300 Cherry Creek Dr. South
Denver, CO 80246-1530

07/27/2025
25US0221

Re: Discharge Monitoring Report for June 2024
Schwartzwalder Mine CO0001244

TO WHOM IT MAY CONCERN:

On February 10th, 2025 the operations contract for the Schwartzwalder Mine was awarded and the contract started on April 1st, 2025.

During the month of June 2025, there was an exceedance for Total Recoverable arsenic at Outfall 001A. Section 7 of *Amendment Number One to Compliance Order on Consent, Number: IC-150123-1*, amended the Total Recoverable arsenic value to "Report" for the 30-day average. As a new permit has not been issued and discussions with the State indicated no deviation from the "Report" only at this time.

A WET test was taken in June. This resulted in a pass.

Best regards,
Linkan

Patrick M. Delaney
Operator Responsible in Charge (ORC)
Black Fox Mining, LLC

Enclosures:

June 2025 DMR Submittal
2nd Quarter 2025 TDS Submittal
2nd Quarter 2025 WET Test Submittal

CC List:

Electronic Copy sent to the following:

Peter Hays, CDNR, peter.hays@state.co.us
Quinn Westmoreland, Linkan, quinn.westmoreland@linkan.com
Adam Billin, Linkan, adam.billin@linkan.com
Chris Prosper, Linkan, chris.prosper@linkan.com
Sam Billin, Linkan, sam.billin@linkan.com
Jared Buck, Linkan, jared.buck@linkan.com
Brandy Wadford, Linkan, brandy.wadford@linkan.com
Alex Schwiebert, Linkan, alex.schwiebert@linkan.com

DMR Copy of Record

Form Approved OMB No. 2040-0004 expires on 07/31/2026

EPA may make all the information submitted through this form (including all attachments) available to the public without further notice to you. Do not use this online form to submit personal information (e.g., non-business cell phone number or non-business email address), confidential business information (CBI), or if you intend to assert a CBI claim on any of the submitted information. Pursuant to 40 CFR 2.203(a), EPA is providing you with notice that all CBI claims must be asserted at the time of submission. EPA cannot accommodate a late CBI claim to cover previously submitted information because efforts to protect the information are not administratively practicable since it may already be disclosed to the public. Although we do not foresee a need for persons to assert a claim of CBI based on the types of information requested in this form, if persons wish to assert a CBI claim we direct submitters to contact the NPDES eReporting Help Desk for further guidance. Please note that EPA may contact you after you submit this report for more information.

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0004). Responses to this collection of information are mandatory in accordance with this permit and EPA NPDES regulations 40 CFR 122.41(l)(4)(i). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information are estimated to average 2 hours per outfall. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Permit

Permit #:	**CO0001244**	**Permittee:**	Colo Div of Reclamation, Mining and Safety	**Facility:**	SCHWARTZWALDER MINE
Major:	No	**Permittee Address:**	1001 E 62 Ave Room 215 Denver, CO 80216	**Facility Location:**	8300 GLENCOE VALLEY RD GOLDEN, CO 80402
Permitted Feature:	001 External Outfall	**Discharge:**	**001-X** Chronic WET Testing for 001A		

Report Dates & Status

Monitoring Period:	**From 04/01/25 to 06/30/25**	**DMR Due Date:**	**07/28/25**	**Status:**	**NetDMR Validated**

Considerations for Form Completion

Rpt lowest % at which statistically signif diff in lethality control (LOEC) & any concentration less than or equal to the IWC using test code "S". Rpt IC25 using test code "P". Use test code "T" to report highest % lethality reported for IC25 and stat signif diff for ceriodaphnia & pimephales.

Principal Executive Officer

First Name:		**Title:**		**Telephone:**	
Last Name:					

No Data Indicator (NODI)

Form NODI: --

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
61426	**Toxicity [chronic], Ceriodaphnia dubia**	P - See Comments	0	--	Sample						=	84.5					2G - tox chronic	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					2G - tox chronic		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
61426	**Toxicity [chronic], Ceriodaphnia dubia**	S - See Comments	0	--	Sample						>	100.0					2G - tox chronic	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					2G - tox chronic		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
61428	**Toxicity [chronic], Pimephales promelas [Fathead Minnow]**	P - See Comments	0	--	Sample						=	99.5					2G - tox chronic	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					2G - tox chronic		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
61428	**Toxicity [chronic], Pimephales promelas [Fathead Minnow]**	S - See Comments	0	--	Sample						>	100.0					2G - tox chronic	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					2G - tox chronic		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
TCP3B	**%Effect Static Renewal 7 Day Chronic Ceriodaphnia dubia**	P - See Comments	0	--	Sample						=	84.2					23 - %	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					23 - %		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
TCP3B	**%Effect Static Renewal 7 Day Chronic Ceriodaphnia dubia**	S - See Comments	0	--	Sample						>	100.0					23 - %	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					23 - %		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
TCP3B	**%Effect Static Renewal 7 Day Chronic Ceriodaphnia dubia**	T - See Comments	0	--	Sample						>	100.0					23 - %	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.						>=	100.0 MN VALUE					23 - %		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
TCP6C	**%Effect Static Renewal 7Day Chronic Pimephales promelas**	P - See Comments	0	--	Sample						=	87.0					23 - %	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					23 - %		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
TCP6C	**%Effect Static Renewal 7Day Chronic Pimephales promelas**	S - See Comments	0	--	Sample						=	100.0					23 - %	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.							Req Mon MN VALUE					23 - %		01/90 - Quarterly	3C - 3 Composite Samples
					Value NODI															
TCP6C	**%Effect Static Renewal 7Day Chronic Pimephales promelas**	T - See Comments	0	--	Sample						=	100.0					23 - %	0	01/90 - Quarterly	3C - 3 Composite Samples
					Permit Req.						>=	100.0 MN VALUE					23 - %		01/90 - Quarterly	3C - 3 Composite Samples

																							Value NODI

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

Name	Type	Size
2025_2ndQ_Schwartzwalder_Outfall_001A_WET_Test_Results.pdf	pdf	5174718.0
2025_06_Schwartzwalder_Outfall_001A_Cover_Letter.pdf	pdf	242956.0

Report Last Saved By

Colo Div of Reclamation, Mining and Safety

User:	pdelaney@alexcoresource.com
Name:	Patrick Delaney
E-Mail:	pdelaney@blackfoxmining.com
Date/Time:	2025-07-28 21:46 (Time Zone: -06:00)

Report Last Signed By

User:	pdelaney@alexcoresource.com
Name:	Patrick Delaney
E-Mail:	pdelaney@blackfoxmining.com
Date/Time:	2025-07-28 21:47 (Time Zone: -06:00)