



TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.

HEADQUARTERS: P.O. BOX 33695 DENVER, COLORADO 80233-0695 303-452-6111

October 29, 2020

VIA Electronic Mail: janet.binns@state.co.us

Ms. Janet Binns
Division of Reclamation, Mining, & Safety
Coal Program Support Staff
1313 Sherman Street, RM 215
Denver, Colorado 80203

RE: September 2020 Discharge Monitoring Report Submittal
CDPS Permit #CO-0000213
Elk Ridge Mining and Reclamation, New Horizon Mine
DRMS Mine Permit #C-1981-008

Dear Ms. Binns:

Enclosed are the Discharge Monitoring Reports (DMR) for the Elk Ridge Mining and Reclamation, LLC, New Horizon Mine CDPS Permit No. CO-0000213 for September 2020. Tri-State Generation and Transmission Association, Inc. (Tri-State) is the parent to Elk Ridge Mining and Reclamation. The enclosed September DMRs were submitted electronically through the EPA's NetDMR program.

If you have any questions about the enclosed reports, please contact Darlene Crosby at 303-254-3055.

Sincerely,

DocuSigned by:

Daniel Casiraro

B70D69F114324DE...

Daniel J. Casiraro
Senior Manager
Environmental Services

DJC:DC:der

Enclosures

cc: Darlene Crosby (via email)
Jason Carver (via email)
Chantell Johnson (via email)
File G474-11.3(10)a-9a

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

A Touchstone Energy® Cooperative 

CRAIG STATION
P.O. BOX 1307
CRAIG, CO 81626-1307
970-824-4411

ESCALANTE STATION
P.O. BOX 577
PREWITT, NM 87045
505-972-5200

NUCLA STATION
P.O. BOX 698
NUCLA, CO 81424-0698
970-864-7316

DMR Copy of Record

Permit

Permit #:

CO0000213

Major:

No

Permittee:

Elk Ridge Mining and Reclamation LLC

Permittee Address:

PO Box 33695
Denver, CO 80233-0695

Facility:

NEW HORIZON MINE

Facility Location:

27646 W 5 AVE
NUCLA, CO 81424

Permitted Feature:

012
External Outfall

Discharge:

012-A
SR and Mine Drainage to Tuttle Draw

Report Dates & Status

Monitoring Period:

From 09/01/20 to 09/30/20

DMR Due Date:

10/28/20

Status:

NetDMR Validated

Considerations for Form Completion

TSS & Fe limits will be waived & settleable solids limit applied for 10YR/24HR precip event - see pp 8-9 for requirements.

Principal Executive Officer

First Name:

Barbara

Last Name:

Walz

Title:

SVP, Policy and Compliance, CCO

Telephone:

303-254-6111

No Data Indicator (NODI)

Form 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

No attachments.

Report Last Saved By

Elk Ridge Mining and Reclamation LLC

User:

dcrosby@tristategt.org

Name:

Darlene Crosby

E-Mail:

dcrosby@tristategt.org

Date/Time:

2020-10-05 09:22 (Time Zone: -06:00)

Report Last Signed By

User:

BARBARAWALZ1

Name:

Barbara Walz

E-Mail:

bwalz@tristategt.org

Date/Time:

2020-10-28 07:11 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:

CO0000213

Major:

No

Permittee:

Elk Ridge Mining and Reclamation LLC

Permittee Address:

PO Box 33695
Denver, CO 80233-0695

Facility:

NEW HORIZON MINE

Facility Location:

27646 W 5 AVE
NUCLA, CO 81424

Permitted Feature:

012
External Outfall

Discharge:

012-Q
Quarterly Monitoring for 012A

Report Dates & Status

Monitoring Period:

From 07/01/20 to 09/30/20

DMR Due Date:

10/28/20

Status:

NetDMR Validated

Considerations for Form Completion

Quarterly monitoring - see Appendix B, #29, pg 43.

Principal Executive Officer

First Name:

Barbara

Last Name:

Walz

Title:

SVP, Policy and Compliance, CCO

Telephone:

303-254-6111

No Data Indicator (NODI)

Form NODI:

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Submission Note

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Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

Elk Ridge Mining and Reclamation LLC

User:

dcrosby@tristategt.org

Name:

Darlene Crosby

E-Mail:

dcrosby@tristategt.org

Date/Time:

2020-10-05 09:22 (Time Zone: -06:00)

Report Last Signed By

User:

BARBARAWALZ1

Name:

Barbara Walz

E-Mail:

bwalz@tristategt.org

Date/Time:

2020-10-28 07:14 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:

CO0000213

Major:

No

Permitted Feature:

013
External Outfall

Permittee:

Elk Ridge Mining and Reclamation LLC

Permittee Address:

PO Box 33695
Denver, CO 80233-0695

Discharge:

013-A
SR & Mine Drainage to Tuttle Draw

Facility:

NEW HORIZON MINE

Facility Location:

27646 W 5 AVE
NUCLA, CO 81424

Report Dates & Status

Monitoring Period:

From 09/01/20 to 09/30/20

DMR Due Date:

10/28/20

Status:

NetDMR Validated

Considerations for Form Completion

TSS & Fe limits will be waived & settleable solids limit applied for 10YR/24HR precip event - see pg 7 for requirements.

Principal Executive Officer

First Name:

Barbara

Last Name:

Walz

Title:

SVP, Policy and Compliance, CCO

Telephone:

303-452-6111

No Data Indicator (NODI)

Form NODI: --

Code	Parameter Name	Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
						Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00400	pH	1 - Effluent Gross	0	--	Sample						=	7.7			=	7.8	12 - SU	0	02/30 - Twice Per Month	GR - GRAB
					Permit Req.						>=	6.5 MINIMUM			<=	9.0 MAXIMUM	12 - SU		02/30 - Twice Per Month	GR - GRAB
					Value NODI															
00978	Arsenic, total recoverable	1 - Effluent Gross	0	--	Sample								=	1.0			28 - ug/L	0	02/30 - Twice Per Month	GR - GRAB
					Permit Req.									Req Mon 30DA AVG			28 - ug/L		02/30 - Twice Per Month	GR - GRAB
					Value NODI															
00980	Iron, total recoverable	1 - Effluent Gross	0	--	Sample								=	590.0	=	594.0	28 - ug/L	0	02/30 - Twice Per Month	GR - GRAB
					Permit Req.								<=	3000.0 30DA AVG	<=	6000.0 DAILY MX	28 - ug/L		02/30 - Twice Per Month	GR - GRAB
					Value NODI															
01303	Zinc, potentially dissolved	1 - Effluent Gross	0	--	Sample								<	20.0	<	20.0	28 - ug/L	0	02/30 - Twice Per Month	GR - GRAB
					Permit Req.									Req Mon 30DA AVG		Req Mon DAILY MX	28 - ug/L		02/30 - Twice Per Month	GR - GRAB
					Value NODI															
01319	Manganese, potentially dissolvd	1 - Effluent Gross	0	--	Sample								=	645.0	=	730.0	28 - ug/L	0	02/30 - Twice Per Month	GR - GRAB
					Permit Req.								<=	2618.0 30DA AVG	<=	4738.0 DAILY MX	28 - ug/L		01/30 - Monthly	GR - GRAB
					Value NODI															
01323	Selenium, potentially dissolvd	1 - Effluent Gross	0	--	Sample								=	0.9	=	1.1	28 - ug/L	0	02/30 - Twice Per Month	GR - GRAB
					Permit Req.								<=	2.3 30DA AVG	<=	18.0 DAILY MX	28 - ug/L		02/30 - Twice Per Month	GR - GRAB
					Value NODI															
03582	Oil and grease	1 - Effluent Gross	0	--	Sample														77/77 - Contingent	GR - GRAB
					Permit Req.										<=	10.0 INST MAX	19 - mg/L			
					Value NODI											9 - Conditional Monitoring - Not Required This Period				
50050	Flow, in conduit or thru treatment plant	1 - Effluent Gross	0	--	Sample	=	1.271	=	1.722	03 - MGD								0	01/01 - Daily	IN - INSTAN
					Permit Req.	<=	1.44 30DA AVG		Req Mon DAILY MX	03 - MGD									01/30 - Monthly	IN - INSTAN
					Value NODI															
84066	Oil and grease visual	1 - Effluent Gross	0	--	Sample			=	0.0	AB - abst=0;prst=1								0	02/30 - Twice Per Month	VI - VISUAL
					Permit Req.				Req Mon INST MAX	AB - abst=0;prst=1									02/30 - Twice Per Month	VI - VISUAL
					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

No attachments.

Report Last Saved By

Elk Ridge Mining and Reclamation LLC

User:

dcrosby@tristategt.org

Name:

Darlene Crosby

E-Mail:

dcrosby@tristategt.org

Date/Time:

2020-10-19 09:32 (Time Zone: -06:00)

Report Last Signed By

User:

BARBARAWALZ1

Name:

Barbara Walz

E-Mail:

bwalz@tristategt.org

Date/Time:

2020-10-28 07:17 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:

CO0000213

Major:

No

Permittee:

Elk Ridge Mining and Reclamation LLC

Permittee Address:

PO Box 33695
Denver, CO 80233-0695

Facility:

NEW HORIZON MINE

Facility Location:

27646 W 5 AVE
NUCLA, CO 81424

Permitted Feature:

013
External Outfall

Discharge:

013-Q
Quarterly Monitoring for 013A

Report Dates & Status

Monitoring Period:

From 07/01/20 to 09/30/20

DMR Due Date:

10/28/20

Status:

NetDMR Validated

Considerations for Form Completion

Quarterly Monitoring - see Appendix B, #29, pg 43

Principal Executive Officer

First Name:

Barbara

Last Name:

Walz

Title:

SVP, Policy and Compliance, CCO

Telephone:

303-452-6111

No Data Indicator (NODI)

Form 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

No attachments.

Report Last Saved By

Elk Ridge Mining and Reclamation LLC

User:

dcrosby@tristategt.org

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Darlene Crosby

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dcrosby@tristategt.org

Date/Time:

2020-10-20 09:34 (Time Zone: -06:00)

Report Last Signed By

BARBARAWALZ1

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Barbara Walz

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bwalz@tristategt.org

Date/Time:

2020-10-28 07:17 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:

CO0000213

Major:

No

Permittee:

Elk Ridge Mining and Reclamation LLC

Permittee Address:

PO Box 33695
Denver, CO 80233-0695

Facility:

NEW HORIZON MINE

Facility Location:

27646 W 5 AVE
NUCLA, CO 81424

Permitted Feature:

013
External Outfall

Discharge:

013-X
CHRONIC WET TESTING FOR 013A

Report Dates & Status

Monitoring Period:

From 07/01/20 to 09/30/20

DMR Due Date:

10/28/20

Status:

NetDMR Validated

Considerations for Form Completion

See Part I.D.1 of permit for details of test procedure. Report NOEC using test code "S". Report IC25 using test code "P". Report highest number between "P" and "S" at "T" for each parameter. IWC=100%.

Principal Executive Officer

First Name:

Barbara

Last Name:

Walz

Title:

SVP, Policy and Compliance, CCO

Telephone:

303-452-6111

No Data Indicator (NODI)

Form 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

Parameter		Monitoring Location	Field	Type	Description	Acknowledge
Code	Name					
TKP3B	Static Renewal 7 Day Chronic Ceriodaphnia dubia	T - See Comments	Quality or Concentration Sample Value 1	Soft	The provided sample value is outside the permit limit. Please verify that the value you have provided is correct. (Error Code: 1)	Yes

Comments

See attached comments

Attachments

Name	Type	Size
201026_New_Horizon_3Q2020_WET_notification_Walz_to_Dyste.pdf	pdf	3052432.0
201026_New_Horizon_September_DMR_Comment_Outfall_013X_Walz_to_CDPHE.pdf	pdf	207225.0
NH2_CDPS_CO0000213_Outfall013_WETresults_Sept2020_COC.pdf	pdf	986110.0
Re_NewHorizon_Mine_Notification_of_3Q19_Chronic_WET_Results_&_Request_for_Waiver_of_TIE.pdf	pdf	76460.0

Report Last Saved By

Elk Ridge Mining and Reclamation LLC

User:

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Name:

Darlene Crosby

E-Mail:	dcrosby@tristategt.org
Date/Time:	2020-10-26 16:17 (Time Zone: -06:00)
<i>Report Last Signed By</i>	
User:	BARBARAWALZ1
Name:	Barbara Walz
E-Mail:	bwalz@tristategt.org
Date/Time:	2020-10-28 07:17 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:

CO0000213

Major:

No

Permittee:

Elk Ridge Mining and Reclamation LLC

Permittee Address:

PO Box 33695
Denver, CO 80233-0695

Facility:

NEW HORIZON MINE

Facility Location:

27646 W 5 AVE
NUCLA, CO 81424

Permitted Feature:

016
External Outfall

Discharge:

016-A
SR & Mine Drainage Tributary to Tuttle Draw

Report Dates & Status

Monitoring Period:

From 09/01/20 to 09/30/20

DMR Due Date:

10/28/20

Status:

NetDMR Validated

Considerations for Form Completion

TSS & Fe limits will be waived & settleable solids limits applied for 10YR/24HR precip event - see pp 8-9 for requirements.

Principal Executive Officer

First Name:

Barbara

Last Name:

Walz

Title:

SVP, Policy and Compliance, CCO

Telephone:

303-254-6111

No Data Indicator (NODI)

Form NODI:

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Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

Elk Ridge Mining and Reclamation LLC

User:

dcrosby@tristategt.org

Name:

Darlene Crosby

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dcrosby@tristategt.org

Date/Time:

2020-10-05 09:23 (Time Zone: -06:00)

Report Last Signed By

User:

BARBARAWALZ1

Name:

Barbara Walz

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bwalz@tristategt.org

Date/Time:

2020-10-28 07:17 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:

CO0000213

Major:

No

Permittee:

Elk Ridge Mining and Reclamation LLC

Permittee Address:

PO Box 33695
Denver, CO 80233-0695

Facility:

NEW HORIZON MINE

Facility Location:

27646 W 5 AVE
NUCLA, CO 81424

Permitted Feature:

016
External Outfall

Discharge:

016-Q
Quarterly Monitoring for 016A

Report Dates & Status

Monitoring Period:

From 07/01/20 to 09/30/20

DMR Due Date:

10/28/20

Status:

NetDMR Validated

Considerations for Form Completion

Quarterly monitoring - see Appendix B, #29, pg 43.

Principal Executive Officer

First Name:

Barbara

Last Name:

Walz

Title:

SVP, Policy and Compliance, CCO

Telephone:

303-254-6111

No Data Indicator (NODI)

Form NODI:

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Submission Note

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Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

Elk Ridge Mining and Reclamation LLC

User:

dcrosby@tristategt.org

Name:

Darlene Crosby

E-Mail:

dcrosby@tristategt.org

Date/Time:

2020-10-05 09:25 (Time Zone: -06:00)

Report Last Signed By

User:

BARBARAWALZ1

Name:

Barbara Walz

E-Mail:

bwalz@tristategt.org

Date/Time:

2020-10-28 07:17 (Time Zone: -06:00)



TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.

HEADQUARTERS: P.O. BOX 33695 DENVER, COLORADO 80233-0695 303-452-6111

October 26, 2020

Water Quality Control Division
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

RE: New Horizon Mine CDPS Permit #CO-0000213
September 2020 DMR Submittal Comments Outfall 013X

Dear CDPHE Representative:

Tri-State recently notified WQCD on of the results of the Third Quarter 2020 WET testing. Tri-State requested a waiver from typical TIE automatic compliance responses, based on ongoing TIE/TRE studies for this Outfall and demonstration that the water quality has been consistent. WQCD previously provided this type of waiver (10/24/2019 enclosed) and is anticipated to approve the Q3 2020 requested waiver.

If you have any questions about these comments, please contact Chantell Johnson at cjohnson@tristategt.org or 303-482-6219 or Darlene Crosby at dcrosby@tristategt.org or 720-315-0100.

Sincerely,

Barbara A. Walz
Senior Vice President
Policy and Compliance
Chief Compliance Officer

BAW:DC:

Enclosures

cc: Chantell Johnson, via email
Darlene Crosby, via email
File: G474-11.3(10)a-9a



TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.

HEADQUARTERS: P.O. BOX 33695 DENVER, COLORADO 80233-0695 303-452-6111

WQCD

New Horizon Outfall 013X March 2020 DMR Comment

Page 2

bcc: Daniel J. Casiraro, via email
Tony Tennyson, via email
Chris Gilbreath, via email

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

A Touchstone Energy® Cooperative



CRAIG STATION
P.O. BOX 1307
CRAIG, CO 81626-1307
970-824-4411

ESCALANTE STATION
P.O. BOX 577
PREWITT, NM 87045
505-972-5200

NUCLA STATION
P.O. BOX 698
NUCLA, CO 81424-0698
970-864-7316


TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.
HEADQUARTERS: P.O. BOX 33695 DENVER, COLORADO 80233-0695 303-452-6111

October 26, 2020

Submitted electronically to jacob.dyste@state.co.us and cdphe.wgrecordscenter@state.co.us

Mr. Jacob Dyste
 Water Quality Control Division
 Colorado Department of Public Health and Environment
 4300 Cherry Creek Drive South
 Denver, Colorado 80246-1530

RE: CDPS Permit #CO-0000213
 New Horizon Mine (Outfall 013)
 Notification of Q3 2020 Chronic WET Results and Waiver Request for TIE/TRE

Dear Mr. Dyste:

On October 23, 2020, the third party laboratory GEI Consultants provided the enclosed analytical report to Tri-State Generation and Transmission Association (Tri-State) containing the third quarter (Q3) Whole Effluent Toxicity (WET) testing results for Outfall 013 at the Elk Ridge Mining and Reclamation, LLC (Elk Ridge) New Horizon Mine (CDPS Permit #CO-0000213). Tri-State is the parent of Elk Ridge. Therefore, we are providing the required notification of WET results, in accordance with Part I.D.1b of the permit.

Outfall	Species	Reproduction/Growth Results		IWC
		NOEC*	IC25**	
013	<i>Ceriodaphnia dubia</i>	80%	70.6%	100%

*NOEC means “no observed effect concentration” at which concentration there are no observable adverse effects on the organisms.

**IC25 means inhibition concentration causing a 25% reduction in the biological measurement.

As discussed in earlier submittals and in accordance with the automatic compliance response requirements of the permit, the facility has conducted multiple Toxicity Identification Evaluations (TIE) and a Toxicity Reduction Evaluation (TRE) for this outfall location. Based on the continued water quality conditions and the comprehensive treatment investigations that are ongoing to address the 2023 WET compliance schedule, we request a waiver from further TIEs (and TREs).

We will also be submitting the initial WET test summary and chains of custody with the September 2020 Discharge Monitoring Report (DMR) by October 28, 2020.



Mr. Jacob Dyste, WQCD
October 26, 2020
Page 2

If you have any questions on this submittal, please contact Chantell Johnson at 303-254-3185 or 303-482-6219 (cjohnson@tristategt.org), or Chris Gilbreath at 303-254-3291 (cgilbreath@tristategt.org).

Sincerely,

DocuSigned by:

Barbara Walz

A5D5C24494CD4A7...

Barbara A. Walz
Senior Vice President
Policy and Compliance
Chief Compliance Officer

BAW:CJ:der

Enclosure

cc: Eric Mink (via email eric.mink@state.co.us)
Chris Gilbreath (via email)
Chantell Johnson (via email)
File G474-11.3(10)a-5





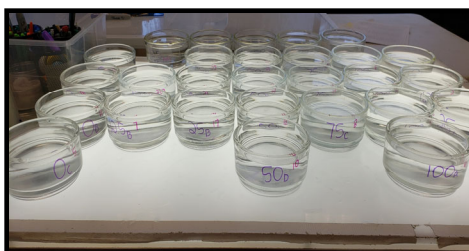
Whole Effluent Toxicity Testing Report

**Tri-State Generation and Transmission
Association, Inc. – New Horizon Mine
Outfall 013 Q3 Compliance Tests**

Submitted to:
Chantell Johnson
1100 W. 116th Ave.
Westminster, CO 80234

Submitted by:
GEI Consultants, Inc.
Ecological Division
4601 DTC Boulevard, Suite 900
Denver, CO 80237

October 22, 2020
Project 1902149
Report prepared by: AR/CL



1.0 Test Summary

Enclosed are the results of the chronic *Ceriodaphnia dubia* and *Pimephales promelas* tests performed August 18 to 25, 2020 and September 10 to 17, 2020, respectively, on the discharge from Outfall 013. Chronic toxicity test procedures followed methods described in EPA documentation (USEPA 2002) and CDPHE guidelines (CDPHE 1998).

The *P. promelas* test was originally initiated concurrently with the *C. dubia* test on August 18, 2020. However, the control organisms did not meet performance criteria (<80% survival) and the test was rescheduled for September 10, 2020.

Temperatures were taken in the test chambers daily for the duration of the *C. dubia* test. Surrogate chambers were included within the setup for the *P. promelas* test with temperatures taken daily. Temperatures on the final day of the test were taken in the actual test chambers. The temperature in the *C. dubia* test differed by 3.7°C.

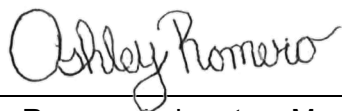
The *C. dubia* test was conducted for seven days, however, control performance criteria were met on day six. Therefore, data from day seven were excluded from all statistical analyses. There were no significant effects on survival; however, there were significant effects on reproduction with an IC₂₅ of 70.6% effluent (95% C.I. unavailable) and a NOEC of 80% effluent. Control performance criteria were met.

Pathogen interference was detected in the *P. promelas* test with sporadic mortality in the lower test concentrations. The quartile method was used to detect outliers in the data set and one replicate was determined to be an outlier; therefore, the 80_D replicate was excluded from all statistical analyses. After outlier exclusion, there were significant effects on survival in the *P. promelas* test with an IC₂₅ 91.8% effluent (95% C.I. unavailable) and a NOEC of 80% effluent. The percent minimum significant difference (PMSD) was above the upper bound of the EPA range of 30% before exclusion. After the replicates were excluded, the PMSD decreased to 28.0%, which is within the EPA range. There were no significant effects on growth and control performance criteria were met. Due to the fact that there were effects on survival and not growth, it is highly likely that the effects were solely due to pathogen interference rather than true toxicity. GEI recommends future testing with effluent exposed to ultraviolet light to control the pathogen interference.

Table 1: Test results summary based on the Outfall 013 IWC of 100% effluent.

Sample	Test Species	Survival		Reproduction/Growth	
		IC ₂₅	NOEC	IC ₂₅	NOEC
Outfall 013	<i>C. dubia</i>	Pass	Pass	Fail	Fail
	<i>P. promelas</i>	Fail	Fail	Pass	Pass

Report approved by:



Ashley Romero, Laboratory Manager



Natalie Love, Laboratory Director

2.0 Test Conditions

2.1 *Ceriodaphnia dubia* 7-day toxicity test to estimate chronic toxicity

Method: EPA-821-R-02-013 -- Short-Term Method for Estimating Chronic Toxicity. . .

Test Duration: until at least 60% of control organisms release 3 broods

Sample Collection Procedure: grab

Sample Collection Date: 8/17/20, 8/19/20, 8/20/20

Dilution water: moderately hard reconstituted water

Age of organisms at start: <24 hours old

Feeding: 0.1 mL YCT/0.1 mL *Selenastrum* daily

End Point: mortality, normalized reproduction

Start Date and Time: 8/18/20 13:05

End Date and Time: 8/25/20 12:25

Type of exposure chamber: 30 mL disposable plastic cup

Volume of exposure chamber: 15 mL

Number of animals exposed/chamber: 1

Number of replicates/treatment: 10

Test temperature: 24.3°C ± 1.9°C
EPA recommended range: 25.0°C ± 1.0°C

Standard toxicant used: NaCl

2.2 *Pimephales promelas* 7-day toxicity test to estimate chronic toxicity

Method: EPA-821-R-02-013 -- Short-Term Method for Estimating Chronic Toxicity. . .

Test Duration: 7 days

Sample Collection Procedure: grab

Sample Collection Date: 9/9/20, 9/10/20, 9/14/20

Dilution water: moderately hard reconstituted water

Age of organisms at start: <24 hours old

Feeding: 0.15 mL *Artemia* nauplii 2 times per day

End Point: mortality, growth

Start Date and Time: 9/10/20 10:20

End Date and Time: 9/17/20 9:45

Type of exposure chamber: 300 mL culture dish

Volume of exposure chamber: 250 mL

Number of animals exposed/chamber: 10

Number of replicates/treatment: 4

Test temperature: 24.9°C ± 1.2°C
EPA recommended range: 25.0°C ± 1.0°C

Aeration: None

Standard toxicant used: NaCl

3.0 QA/QC Summary

3.1 Sample QA/QC

Client: Tri-State Generation and Transmission

Date tests start: 8/18/20, 9/10/20

Chain of custody received.....Yes

Chain of custody completed.....Yes

Samples received within holding times.....Yes

Samples at correct temperature (0-6°C or sampled same day received).....Yes

Samples used within 36 hours of collection..... Yes

3.2 Test Acceptability

Control performance criteria met (Table 2).....Yes

Table 2: Control performance criteria requirements by species and sample type.

Test Species	Survival		Reproduction/Growth	
	Test (%)	Acceptable (%)	Test (# or mg)	Acceptable (# or mg)
<i>C. dubia</i>	100	80	31.1	15.0
<i>P. promelas</i>	95	80	0.431	0.250

Tests renewed within acceptable timeframeYes

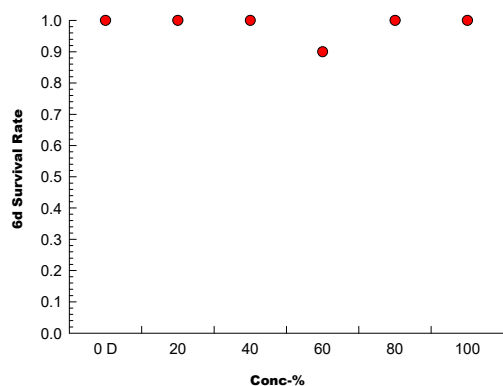
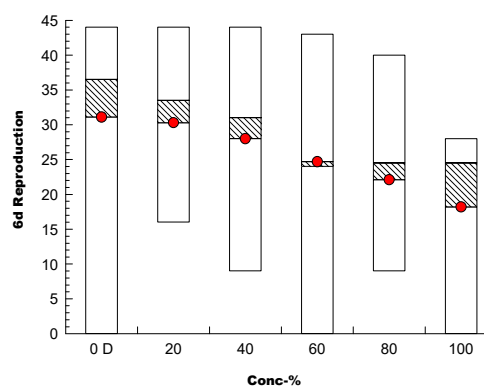
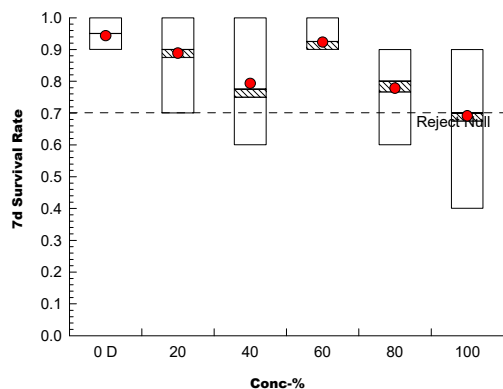
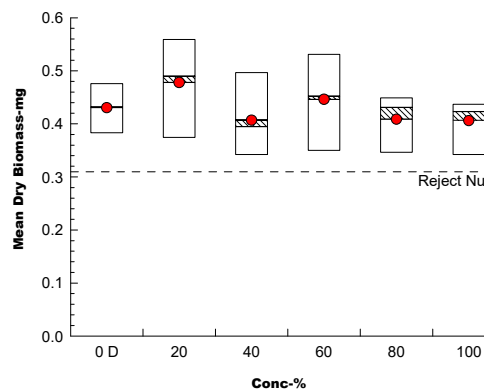
At least 60% of control organisms in chronic *C. dubia* test released at least 3 broodsYes

3.3 Statistical QA/QC

Percent minimum significant difference (PMSD) below upper bound (Table 3).....Yes

Table 3: Calculated and allowable PMSD upper bounds by species.

Test Species	Calculated PMSD	EPA PMSD Upper Bound
<i>C. dubia</i>	40	47
<i>P. promelas</i>	28	30

Evaluation of concentration-response curve conducted for all endpoints(Figures 1-4 & Table 4) Yes**Figure 1: *C. dubia* survival****Figure 2: *C. dubia* reproduction****Figure 3: *P. promelas* survival****Figure 4: *P. promelas* growth****Table 4: Concentration-response curve evaluation summary.**

Species	Endpoint	Concentration-Response Pattern	Valid Curve	Data Acceptability
<i>C. dubia</i>	Survival	Varied with no significant effects	Yes	Approved
	Reproduction	Varied with significant effects in the highest test concentration	Yes	Approved
<i>P. promelas</i>	Survival	Varied with significant effects in the highest test concentration	Yes	Approved
	Growth	Varied with no significant effects	Yes	Approved

3.4 Reference Toxicant Summary

Most recent reference toxicant tests met performance requirements (Tables 5 & 6).....Yes

Most recent reference toxicant tests within control chart requirements.....Yes

Table 5: Chronic *Ceriodaphnia dubia* reference toxicant test with NaCl, conducted August 4 to 10, 2020.

mg NaCl/L	Control	150	300	600	1200	2400
#alive/#exposed	10/10	10/10	10/10	10/10	10/10	0/10
% survival	100	100	100	100	100	0
Normalized reproduction $\pm$ SD	41.4 $\pm$ 5.8	38.7 $\pm$ 8.8	36.7 $\pm$ 7.9	38.9 $\pm$ 3.9	13.6 $\pm$ 5.9	0.0 $\pm$ 0.0

Normalized Reproduction:

IC₂₅ (ICp Method) = 767.4 mg NaCl/L (95% C.I. 681.6 to 823.1)

Note: This is within our accepted performance range (400.9 to 1348.0) determined by 20 previous reference tests performed.

Table 6: Chronic *Pimephales promelas* reference toxicant test with NaCl, conducted September 10 to 17, 2020.

g NaCl/L	Control	0.5	1.5	3.0	5.0	7.0
#alive/#exposed	38/40	37/40	34/40	24/40	23/40	4/40
% survival	95	92.5	85	60	57.5	10
Dry Weight (mg) $\pm$ SD	0.439 $\pm$ 0.058	0.438 $\pm$ 0.060	0.360 $\pm$ 0.090	0.198 $\pm$ 0.049	0.153 $\pm$ 0.040	0.041 $\pm$ 0.027

Growth:

IC₂₅ (ICp Method) = 1.78 g NaCl/L (95% C.I. 0.73 to 2.36)

Note: This is within our accepted performance range (1.04 to 2.39) determined by 20 previous reference tests performed.

4.0 Results

4.1 *Ceriodaphnia dubia* Chronic Toxicity Test

TEST: 7- day chronic with *Ceriodaphnia dubia* OPERATORS: AW, JMS, LAG, TE, JW, CL

Start: 8/18/20 13:05

End: 8/25/20 12:25

Test Substance: Outfall 013 Effluent

Client/Project: Tri-State Generation and Transmission – New Horizon Mine

Table 7: Summary results of *C. dubia* chronic toxicity test.

Treatment % Effluent	0	20	40	60	80	100
#alive/#exposed	10/10	10/10	10/10	9/10	10/10	10/10
% survival	100	100	100	90	100	100
Normalized repro / # females exposed $\pm$ SD	31.1 $\pm$ 15.6	30.3 $\pm$ 9.3	28.0 $\pm$ 13.8	24.7 $\pm$ 11.3	22.1 $\pm$ 10.8	18.2 $\pm$ 10.9
Dissolved O ₂ range (mg/L)	<u>7.1</u> 6.6	<u>7.1</u> 6.6	<u>7.1</u> 6.7	<u>7.1</u> 6.6	<u>7.0</u> 6.6	<u>7.2</u> 6.8
pH range (SU)	<u>8.4</u> 8.3	<u>8.5</u> 8.4	<u>8.6</u> 8.5	<u>8.4</u> 8.3	<u>8.3</u> 8.2	<u>8.3</u> 8.2
Conductivity range (μ mho/cm)	<u>518</u> 348	<u>1169</u> 760	<u>1727</u> 1142	<u>2157</u> 1417	<u>2545</u> 1675	<u>2957</u> 1965
Temperature range (°C)	<u>25.6</u> 24.1	<u>26.0</u> 23.5	<u>26.1</u> 23.8	<u>25.9</u> 23.9	<u>26.1</u> 22.4	<u>25.6</u> 23.7

Statistical Analysis:

Survival:

NOEC (Fisher Exact/Bonferroni-Holm) = 100% Effluent

IC₂₅ (ICp Method) = >100% Effluent (95% C.I. unavailable)

Normalized Reproduction:

NOEC (Steel Many-One Rank Sum) = 80% Effluent

IC₂₅ (ICp Method) = 70.6% Effluent (95% C.I. unavailable)

4.2 *Pimephales promelas* Chronic Toxicity Test

TEST: 7-day chronic with *Pimephales promelas* **OPERATORS:** AW, LAG, JW, TE, JMS

Start: 9/10/20 10:20

End: 9/17/20 9:45

Test Substance: Outfall 013 Effluent

Client/Project: Tri-State Generation and Transmission – New Horizon Mine

Table 8: Summary results of *P. promelas* chronic toxicity test.

Treatment % Effluent	0	20	40	60	80*	100
#alive/#exposed	38/40	35/40	31/40	37/40	23/30	27/40
% survival	95	87.5	77.5	92.5	76.7	67.5
Dry weight (mean wt. (mg)/ #exposed ± SD)	0.431 ± 0.047	0.478 ± 0.090	0.407 ± 0.073	0.446 ± 0.074	0.409 ± 0.055	0.406 ± 0.043
Dissolved O ₂ range (mg/L)	<u>6.5</u> 5.7	<u>6.3</u> 5.2	<u>6.3</u> 5.1	<u>6.2</u> 5.0	<u>6.3</u> 5.1	<u>6.3</u> 5.2
pH range (SU)	<u>8.0</u> 7.8	<u>8.3</u> 8.0	<u>8.4</u> 8.2	<u>8.4</u> 8.1	<u>8.3</u> 8.0	<u>8.2</u> 8.0
Conductivity range (µmho/cm)	<u>344</u> 325	<u>769</u> 697	<u>1133</u> 1033	<u>1458</u> 1335	<u>1729</u> 1612	<u>2030</u> 1871
Temperature range (°C)	<u>26.1</u> 24.3	<u>25.8</u> 23.8	<u>25.4</u> 23.7	<u>25.4</u> 24.1	<u>25.5</u> 24.6	<u>25.3</u> 24.5

*One replicate determined to be an outlier by the quartile method; replicate "D" excluded from all statistical analyses.

Statistical Analysis:

Survival:

NOEC (Bonferroni Adj t) = 80% Effluent

IC₂₅ (ICp Method) = 91.8% Effluent (95% C.I. unavailable)

Growth:

NOEC (Bonferroni Adj t) = 100% Effluent

IC₂₅ (ICp Method) = >100% Effluent (95% C.I. unavailable)

4.3 Water Chemistry Results from Samples Received for Toxicity Tests

Table 9: Chemistry on reconstituted waters and effluent samples used in chronic *C. dubia* test.

Measurement	MH Recon Water*	100% Effluent Received 8/17/20	100% Effluent Received 8/19/20	100% Effluent Received 8/20/20
Analysis Temperature (°C)	25.0	25.0	25.0	25.0
Total Hardness (mg CaCO ₃ /L)	98	1236	1350	1330
pH (SU)	8.2	7.4	7.6	7.5
Alkalinity (mg CaCO ₃ /L)	69	298	316	322
Conductivity (µmho/cm)	348	1935	2711	2791
Total Dissolved Solids Calculated from Conductivity (mg/L)	--	948	1327	1370
Dissolved Oxygen (mg/L)	7.1	5.4	6.7	5.4
Ammonia as N (mg NH ₃ /L)	--	0.64	0.60	0.93
Un-ionized Ammonia (mg NH ₃ /L)	--	<0.10	<0.10	<0.10
Total Residual Chlorine (mg/L)	--	<0.02	<0.02	<0.02

*Represents an average of three reconstituted waters used.

Table 10: Chemistry on reconstituted waters and effluent samples used in chronic *P. promelas* test.

Measurement	MH Recon Water*	100% Effluent Received 9/9/20	100% Effluent Received 9/10/20	100% Effluent Received 9/14/20
Analysis Temperature (°C)	25.0	25.0	25.0	25.0
Total Hardness (mg CaCO ₃ /L)	96	1270	1250	1180
pH (SU)	8.2	7.7	7.5	7.2
Alkalinity (mg CaCO ₃ /L)	69	288	294	308
Conductivity (µmho/cm)	306	1795	1943	2059
Total Dissolved Solids Calculated from Conductivity (mg/L)	--	880	952	1009
Dissolved Oxygen (mg/L)	7.1	7.6	7.9	7.6
Ammonia as N (mg NH ₃ /L)	--	0.99	1.04**	0.67
Un-ionized Ammonia (mg NH ₃ /L)	--	<0.10	<0.10	<0.10
Total Residual Chlorine (mg/L)	--	<0.02	<0.02	<0.02

*Represents an average of five reconstituted waters used.

**Based on Lachat NH₃

5.0 References

Colorado Department of Public Health and Environment (CDPHE). 1998. Water Quality Control Division. Laboratory guidelines for conducting whole effluent toxicity tests. Denver, Colorado.

Tidepool Scientific Software. 2000-2018. CETIS - Comprehensive Environmental Toxicity Information System. V1.9.5.5. McKinleyville, CA.

U.S. Environmental Protection Agency (EPA). 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA-821-R-02-013. Office of Water, Washington D.C.

Appendix A

Colorado CDPS WET test report forms

COLORADO – CDPS WET TEST REPORT FORM – CHRONICPERMITEE NAME: Tri State, NH2 MineCDPS NO: CO-0000213OUTFALL: 013TYPE TEST: ROUTINE ☒

ACCELERATED

TEST SPECIES: Ceriodaphnia dubia

Test Results:

Lethality

Growth

Reproduction

CONC. WITH STAT. DIFFERENCE	>100%	NA	100%
PASS/FAIL	PASS	NA	FAIL
NOEC	100%	NA	80%
PASS/FAIL	PASS	NA	FAIL
IC ₂₅	>100%	NA	70.6% (95% C.I. unavailable)
PASS/FAIL	PASS	NA	FAIL

STAT. METHOD USED: STATISTICAL DIFF.:

NOEC, LC₅₀IC₂₅ICp METHODTEST DATE/TIME: START 8/18/20 13:05

END

8/25/20 12:25

DILUTIONS (%EFFLUENT)

	CONTROL	20%	40%	60%	80%	100%
% SURVIVAL FOR DAY: 1	100	100	100	100	100	100
2	100	100	100	100	100	100
3	100	100	100	100	100	100
4	100	100	100	100	100	100
5	100	100	100	100	100	100
6	100	100	100	90	100	100
MEAN 3 BROOD TOTAL:	31.1	30.3	28.0	24.7	22.1	18.2
7 DAY MEAN DRY WEIGHT:						
pH MAX/MIN:	8.4/8.3	8.5/8.4	8.6/8.5	8.4/8.3	8.3/8.2	8.3/8.2

MEAN HARDNESS (mg/L) RECEIVING WATER: NA EFFLUENT: 1305 RECON WATER: 98MEAN ALKALINITY (mg/L) RECEIVING WATER: NA EFFLUENT: 312 RECON WATER: 69MEAN T. AMMONIA as N (mg/L) INITIAL EFFLUENT: 0.72 FINAL EFFLUENT: NAMEAN T. RESIDUAL CHLORINE (mg/L) 100%: <0.02 RECEIVING WATER USED FOR DILUTIONS? (Y/N) NWERE ALL TEST CONDITIONS IN CONFORMANCE WITH DIVISION GUIDELINES? (Y/N) Y

IF NO, LIST DEVIATIONS FROM TEST SPECIFICATIONS:

ANALYST: C. LindseySIGNATURE: LABORATORY: GEI Consultants, Inc./Ecological DivisionDATE: 10/13/2020COMMENTS: The temperature in the test differed by 3.7°C.

COLORADO – CDPS WET TEST REPORT FORM – CHRONICPERMITEE NAME: Tri State, NH2 MineCDPS NO: CO-0000213OUTFALL: 013TYPE TEST: ROUTINE ☒

ACCELERATED

TEST SPECIES: Pimephales promelas

Test Results:

Lethality

Growth

Reproduction

CONC. WITH STAT. DIFFERENCE	100%	>100%	NA
PASS/FAIL	FAIL	PASS	NA
NOEC	80%	100%	NA
PASS/FAIL	FAIL	PASS	NA
IC ₂₅	91.8% (95% C.I. unavailable)	>100%	NA
PASS/FAIL	FAIL	PASS	NA

STAT. METHOD USED: STATISTICAL DIFF.:

NOEC, LC₅₀IC₂₅ICp METHODTEST DATE/TIME: START 9/10/20 10:20END 9/17/20 9:45

DILUTIONS (%EFFLUENT)

	CONTROL	20%	40%	60%	80%*	100%
% SURVIVAL FOR DAY: 1	100	100	100	100	100	100
2	100	100	97.5	100	90	82.5
3	97.5	100	95	97.5	86.7	70
4	97.5	92.5	92.5	97.5	83.3	67.5
5	95	87.5	87.5	92.5	83.3	67.5
6	95	87.5	87.5	92.5	80	67.5
7	95	87.5	77.5	92.5	76.7	67.5
MEAN 3 BROOD TOTAL:						
7 DAY MEAN DRY WEIGHT:	0.431	0.478	0.407	0.446	0.409	0.406
pH MAX/MIN:	8.0/7.8	8.3/8.0	8.4/8.2	8.4/8.1	8.3/8.0	8.2/8.0

MEAN HARDNESS (mg/L) RECEIVING WATER: NA EFFLUENT: 1233 RECON WATER: 96MEAN ALKALINITY (mg/L) RECEIVING WATER: NA EFFLUENT: 297 RECON WATER: 69MEAN T. AMMONIA as N (mg/L) INITIAL EFFLUENT: 0.83 FINAL EFFLUENT: NAMEAN T. RESIDUAL CHLORINE (mg/L) 100%: <0.02 RECEIVING WATER USED FOR DILUTIONS? (Y/N) NWERE ALL TEST CONDITIONS IN CONFORMANCE WITH DIVISION GUIDELINES? (Y/N) Y

IF NO, LIST DEVIATIONS FROM TEST SPECIFICATIONS:

ANALYST: C. LindseySIGNATURE: LABORATORY: GEI Consultants, Inc./Ecological Division DATE: 10/13/2020COMMENTS: *One replicate determined to be an outlier by the quartile method; replicate "D" excluded from all statistical analyses.

Appendix B

Chain-of-custody forms and laboratory bench sheets from whole effluent toxicity tests

GEI Consultants, Inc./Ecological Division
4601 DTC BLVD., SUITE L100
DENVER, CO 80237
Main: (303) 662-0100 Lab: (303) 264-1120

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

(GEI Use) Log Number NH 820-013-2

CLIENT/PROJECT <u>ERM/ NPDES 013 OUTFALL</u>		ADDRESS <u>27646 W. 5TH</u>		CITY <u>NUCIA</u>	STATE <u>CO</u>	ZIP <u>81424</u>
PHONE # <u>970.864.7316 EXT. 1109</u>		PROJ. MANAGER <u>C. JOHNSON</u>		SAMPLER <u>J. CARVER</u>		
SAMPLE TYPE/SITE	Composite	Grab	Date Collected	Time Collected	TESTS REQUIRED	
<u>OUTFALL 013 EFFLUENT</u> <u>GRAB</u>	☒	☒	<u>8/19/20</u>	<u>0822</u>	ACUTE	
					CHRONIC	
					CHLORINE	
					Measured by:	
					Client	
					Lab	
					TRC (mg/L)	Date/Time Measured
					<u>40.02</u>	<u>8/20/20 810</u>
					COMMENTS:	
PROJECT INFORMATION		LABORATORY RECEIVING INFORMATION				
CLIENT DROP OFF:	CONDITION OF SAMPLE ON RECEIPT: <u>62001</u>					
COURIER:	CUSTODY SEAL INTACT?: YES ☒ NO ☐ N/A ☐					
UPS ☒ FEDEX ☐ OTHER ☐						
TOTAL NUMBER OF CONTAINERS: <u>2</u>	TEMPERATURE (°C): <u>0.5</u>					
	TEMPERATURE IN RANGE (0-6°C): YES ☒ NO ☐					
	IF NOT IN RANGE, SAMPLED SAME DAY, TEMP OK?: YES ☐ NO ☐					
COMMENTS: <u>AT COLLECTION:</u>		LABORATORY RECEIVED BY: <u>[Signature]</u>				
<u>Phsu: 7.70 Temp °C: 16.4p Cond. mskm: 2.24</u>		DATE/TIME: <u>8/19/2020 0839</u>				
		DATE/TIME: <u>8/20/20 730</u>				

(GEI Use) Log Number NH 820-013-3

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

Updated 2019

NY 1820-013-3

BIOASSAY CHAIN-OF-CUSTODY

Updated 2019

2-0267N

CHLORINE

Measured by:

Client

Lab. ✓

COMMENTS:

9/10/20 0815

<

11/20 915

CLIENT
RELINQUISHED BY: *James Cam*

9/10/2020 0845

CONDITION OF SAMPLE ON RECEIPT: GOOD

CUSTODY SEAL INTACT?: YES ☒ NO ☐ N/A ☐

TEMPERATURE (°C): 3.0

TEMPERATURE IN RANGE (0-6°C): YES ☒ NO ☐

IF NOT IN RANGE, SAMPLED SAME DAY, TEMP OK?: YES ☐ NO ☐

CONTAINERS 1 + 2

COMMENTS: AT Collection.

9/11/20 8/5

LABORATORY
RECEIVED BY: Jimmy Webster

Cond. $\mu\text{S}/\text{cm}$: 2, 041

2-020924

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

CLIENT/PROJECT <u>ERM/R/NPDES 013</u>		TESTS REQUIRED		CHLORINE Measured by: Client ☐ Lab ☒	COMMENTS:
ADDRESS <u>27646 W. 5TH</u>		ACUTE			
CITY <u>NUCLA</u> STATE <u>CO</u> ZIP <u>81424</u>		CHRONIC			
PHONE # <u>970-864-7316 EXT. 1109</u>		C E R I O F A D D A P H T R O I O C A L A P H A I			
PROJ. MANAGER <u>C. JOHNSON</u> SAMPLER <u>J. CARVER</u>		D A P H T R O I O C A L A P H A I			
SAMPLE TYPE/SITE	Composite	Grab	Date Collected	Time Collected	
<u>OUTFALL 013 EFFLUENT GRAB</u>		☒	<u>9/10/20</u>	<u>0815</u>	
PROJECT INFORMATION		LABORATORY RECEIVING INFORMATION			
CLIENT DROP OFF: ☐	CONDITION OF SAMPLE ON RECEIPT: <u>Good</u>				
COURIER:	CUSTODY SEAL INTACT?: YES ☒ NO ☐ N/A ☐				
UPS ☐ FEDEX ☒ OTHER ☐					
TOTAL NUMBER OF CONTAINERS: <u>4</u>	TEMPERATURE (°C): <u>5.0</u>				
<u>CONTAINERS 3 + 4</u>	TEMPERATURE IN RANGE (0-6°C): YES ☒ NO ☐ IF NOT IN RANGE, SAMPLED SAME DAY, TEMP OK?: YES ☐ NO ☐				
COMMENTS: <u>AT Collection:</u>		CLIENT RELINQUISHED BY: <u>James Cam...</u>		LABORATORY RECEIVED BY: <u>JIMMY WEBSTER JR</u>	
<u>Phsu: 7.88 Temp°C: 13.2 Cond. µS/cm: 2,047</u>		DATE/TIME: <u>9/10/2020 0845</u>		DATE/TIME: <u>9/11/20 815</u>	

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

NH920

ORGANISM HISTORY

DATE: 9/9/2020

SPECIES: *Pimephales promelas*

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 9/9/2020

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:

	Current	Range
TEMPERATURE:	<u>24°C</u>	<u>--</u>
SALINITY/CONDUCTIVITY:	<u>--</u>	<u>--</u>
TOTAL HARDNESS (as CaCO ₃):	<u>110 mg/l</u>	<u>--</u>
TOTAL ALKALINITY (as CaCO ₃):	<u>100 mg/l</u>	<u>--</u>
pH:	<u>7.55</u>	<u>--</u>

Comments:



Facility Supervisor

INITIAL CHEMISTRY BENCH SHEET

Client/Project: Tri-State /NH 820-013

Samples Received: Date/Time 8/18/20

845

Test Substance: Effluent 013

What test/s will samples be used in?

Ch C/F

Dilution Water: lab water or receiving water

SAMPLE TYPE LOG NUMBER DATE COLLECTED	DATE/TIME ANALYZED	DATES USED	ANALYSES TEMP. (°C)	TOTAL HARDNESS (mg/L)	pH (SU)	TOTAL ALKALINITY (mg/L)	D.O. (mg/L)	COND. (µs)	TDS CALCULATED FROM COND. (mg/L)	TRC (mg/L)	AMMONIA AS N (mg/L)	METER USED	ANALYST
EFFLUENT 013 NH 820-013-1 8/17/20	8/19/20 1200	8/19/20	25.0	61.81 1230	7.4	14.9 298	5.4	1935	948	40.02	0.64	1	AN
EFFLUENT 013 NH 820-013-2 8/19/20	8/20/20 1020	8/20/20	25.0	13.5 x 100 1350	7.6	15.81 316	6.7	2711	1327	40.02	0.4160	1	LAG
EFFLUENT 013 NH 820-013-3 8/20/20	8/21/21 1020	8/21/20	25.0	13.3 x 100 1330	7.5	16.1 322	5.4	2711	1370	40.02	0.93	1	LAG
Average			25.0	1305	7.5	312	5.8	2479	1215	40.02	0.72		

Site Daily Measurements	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7					
pH/initials	7.4/AN	7.3/AN	7.6/AN	7.5/AN	7.3/AN	7.6/AN	7.6/AN						
pH/initials													
pH/initials													
pH/initials													

COMMENTS:

Samples stored in refrigerator: N

Data Checked and Approved by Laboratory Manager (Initials): AN

INITIAL CHEMISTRY BENCH SHEET

Client/Project: Tri-State /NH920

Samples Received: Date/Time 9/10/20 750

Test Substance: Effluent 013

What test/s will samples be used in?

Ch F

Dilution Water: lab water or receiving water

SAMPLE TYPE LOG NUMBER DATE COLLECTED	DATE/TIME ANALYZED	DATES USED	ANALYSES TEMP. (°C)	TOTAL HARDNESS (mg/L)	pH (SU)	TOTAL ALKALINITY (mg/L)	D.O. (mg/L)	COND. (µS)	TDS CALCULATED FROM COND. (mg/L)	TRC (mg/L)	AMMONIA AS N (mg/L)	METER USED	ANALYST
Effluent NH920-1 9/9/20	9/10/20 1515	9/10/20 9/10/20	25.0	$\frac{12.7 \times 100}{1270}$	7.7 LHG	$\frac{14.4}{288}$	7.6	1795	880	<0.02	0.99	1	LHG
Effluent NH920-2 9/10/20	9/10/20 1440	9/10/20 9/10/20	25.0	$\frac{12.5 \times 100}{1250}$	7.5	$\frac{14.7}{294}$	7.9	1943	952	<0.02	1.04	1	LHG
Effluent NH920-3 9/14/20	9/15/20 920	9/15/20 9/16/20	25.0	$\frac{11.8 \times 100}{1180}$	7.2	$\frac{15.4}{308}$	7.6	2059	1009	<0.02	0.67	1	AM
Averages			25.0	1233	7.5	297	7.7	1932	947	<0.02	0.83		

Site Daily Measurements	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7					
pH/initials	7.7 LHG	7.5 LHG	7.3 WN	7.2 WN	7.5 TE	7.2 AM	7.2 AM						
pH/initials													
pH/initials													
pH/initials													

COMMENTS: * Fish not recorded

Samples stored in refrigerator: N

Data Checked and Approved by Laboratory Manager (Initials): AK

RECONSTITUTED SYNTHETIC LABORATORY WATER CHEMISTRY BENCH SHEET

Client/Project: Tri-State /NH 820Test Substance: Effluent 013Analyst: AWWhat test/s will
samples be used in? Ch C/FTest/s Start Date: 8/18/20

BATCH #	ANALYSES TEMP. (°C)	TOTAL HARDNESS (mg/L)	pH (SU)	TOTAL ALKALINITY (mg/L)	D.O. (mg/L)	COND. (µS)
MH154	25.0	96	8.2	68	6.9	321
MH155	25.0	100	8.2	70	7.3	309
MH175	25.0	98	8.2	68	7.0	415
AVERAGE VALUE	25.0	98	8.2	69	7.1	348

COMMENTS:

Data Checked and Approved by Laboratory Manager (Initials): AW

RECONSTITUTED SYNTHETIC LABORATORY WATER CHEMISTRY BENCH SHEET

Client/Project: Tri-State /NH920Test Substance: Effluent 013What test/s will
samples be used in? Ch FAnalyst: ANTest/s Start Date: 9/10/20

BATCH #	ANALYSES TEMP. (°C)	TOTAL HARDNESS (mg/L)	pH (SU)	TOTAL ALKALINITY (mg/L)	D.O. (mg/L)	COND. (µS)
MH195	25.0	100	8.2	70	7.5	298
MH197	25.0	96	8.2	70	7.0	328
MH199	25.0	94	8.1	68	7.2	295
MH198	25.0	96	8.1	70	7.2	297
MH179	25.0	96	8.4 ^{AN} 8.2	68 70 ^{AN}	6.8 7.0 ^{AN}	310 328 ^{AN}
AVERAGE VALUE	25.0	96	8.2	69	7.1	306

COMMENTS:Data Checked and Approved by Laboratory Manager (Initials): AN

CHRONIC TOXICITY CHEMISTRY BENCH SHEET

START Date: 8/18/20FINISH Date: 8/25/20Dilution Water: MH ReconTest Substance: Effluent 013Client/Project: Tri-State /NH 820Organism: C. dubia

Test Conc.	Chemical Parameter	Day of Test							COMMENTS
		1	2	3	4	5	6	7	
0	DO (mg/L)	6.7	6.9	6.6	6.8	7.0	6.2*	6.8	* 7.1
	Cond. (µS)	348	485	518	478	464	435*	353	* 446
	pH	8.4	8.4	8.4	8.3	8.3	8.0*	8.2	* 8.3
	Temp. (°C)	24.2	24.1	25.0	25.0	24.1	25.6	24.8	
20	DO (mg/L)	6.6	6.9	6.6	6.7	6.9	5.9*	6.7	* 7.1
	Cond. (µS)	760	1097	1169	1107	1062	1020*	802	* 1031
	pH	8.4	8.5	8.5	8.5	8.5	8.5	8.4	
	Temp. (°C)	26.0	24.3	25.6	23.5	23.6	25.4	23.1	
40	DO (mg/L)	6.7	7.0	6.7	6.7	6.9	5.7*	6.8	* 7.1
	Cond. (µS)	1142	1673	1727	1646	1600	1517*	1208	* 1545
	pH	8.5	8.6	8.5	8.5	8.6	8.6	8.5	
	Temp. (°C)	26.1	23.9	25.7	24.0	23.8	25.2	24.6	
60	DO (mg/L)	6.7	7.1	6.6	6.7	7.0	5.7*	6.8	* 7.0
	Cond. (µS)	1417	2097	2157	2068	2046	2040*	1560	* 1965
	pH	8.3	8.3	8.4	8.3	8.4	8.4	8.3	
	Temp. (°C)	25.2	24.0	25.0	25.1	23.9	25.9	24.0	
80	DO (mg/L)	6.8	7.0	6.7	6.6	6.9	5.7*	6.9	* 7.0
	Cond. (µS)	1675	2480	2545	2406	2437	2396*	1815	* 2297
	pH	8.2	8.2	8.2	8.2	8.3	8.3	8.2	
	Temp. (°C)	22.4	23.6	25.5	26.1	25.1	25.9	24.4	
100	DO (mg/L)	6.9	7.2	6.9	6.8	6.9	5.4*	6.9	* 7.0
	Cond. (µS)	1465	2957	2945	2837	2883	2772*	2165	* 2662
	pH	8.2	8.2	8.2	8.2	8.2	8.3	8.2	
	Temp. (°C)	25.6	23.7	25.4	25.6	25.0	25.5	24.3	
Incubator Temperature (°C)		23.5	24.0	23.5	23.5	23.5	23.5	24.0	Max: 26.1
Analyst		JMS	LWG	LWG	TE	MW	TE	JMS	Min: 22.4
Time Analyzed		1435	1415	1540	1300	1305	1450	1350	Range: 3.7
Environmental Chamber		WY	T	T	T	T	T	T	Mean: 24.3 ± 1.9
Meter Number		1	1	1	1	1	1	1	

Day seven Data from day seven
excluded from all statistical
analyses.

Data Checked and Approved by Laboratory Manager (Initials): AR

CHRONIC TOXICITY CHEMISTRY BENCH SHEET

START Date: 9/10/20FINISH Date: 9/17/20Dilution Water: MH ReconTest Substance: Effluent 013Client/Project: Tri-State /NH920Organism: P. promelas

Test Conc.	Chemical Parameter	Day of Test							COMMENTS
		1	2	3	4	5	6	7	
0	DO (mg/L)	6.4	6.5	6.2	6.1	5.8	5.7	5.8	
	Cond. (µS)	330	342	330	338	325	344	326	
	pH	8.0	8.0	7.9	7.9	7.9	7.8	7.9	
	Temp. (°C)	24.6	25.6	24.7	25.3	25.4	24.3	26.1	
20	DO (mg/L)	6.3	6.3	5.9	5.8	5.5	5.2	5.7	
	Cond. (µS)	697	735	720	748	716	769	725	
	pH	8.3	8.2	8.1	8.1	8.0	8.0	8.1	
	Temp. (°C)	24.4	25.3	23.8	24.7	25.1	24.4	25.8	
40	DO (mg/L)	6.2	6.3	5.9	5.8	5.3	5.1	5.7	
	Cond. (µS)	1033	1093	1053	1103	1047	1133	1072	
	pH	8.4	8.3	8.3	8.3	8.2	8.2	8.2	
	Temp. (°C)	23.7	25.4	24.4	25.0	25.1	24.2	25.4	
60	DO (mg/L)	6.2	6.2	5.9	5.8	5.6	5.0	5.5	
	Cond. (µS)	1335	1410	1368	1439	1347	1458	1391	
	pH	8.4	8.3	8.2	8.2	8.2	8.1	8.1	
	Temp. (°C)	24.5	24.6	24.4	25.0	25.3	24.1	25.4	
80	DO (mg/L)	6.3	6.1	5.6	5.8	5.7	5.1	5.6	
	Cond. (µS)	1612	1693	1645	1715	1629	1729	1670	
	pH	8.3	8.2	8.1	8.1	8.1	8.0	8.1	
	Temp. (°C)	24.8	25.2	24.7	25.1	25.3	24.6	25.5	
100	DO (mg/L)	6.3	6.1	5.8	5.9	5.9	5.2	5.7	
	Cond. (µS)	1871	1977	1931	1986	1899	2030	1957	
	pH	8.2	8.1	8.1	8.1	8.1	8.0	8.0	
	Temp. (°C)	24.6	25.1	24.7	25.0	25.3	24.5	25.1	
Incubator Temperature (°C)		26.0	26.0	25.5	26.0	26.0	26.0	26.0	Max: 26.0
Analyst		LAG	W	W	TE	AW	JMS	AW	Min: 25.5
Time Analyzed		1130	845	915	930	1215	1240	1035	Range: 2.4
Environmental Chamber		✓	✓	✓	✓	✓	✓	✓	Mean: 24.9 ± 1.2
Meter Number		1	1	1	1	1	1	1	

Data Checked and Approved by Laboratory Manager (Initials): AR

CERIODAPHNIA DUBIA 3-BROOD CHRONIC TOXICITY TEST BENCH SHEET

PAGE 1/2

START Date/Time: 8/18/20 1305FINISH Date/Time: 8/25/20 1225Dilution Water: MH ReconTest Substance: Effluent 013Client/Project: Tri-State/NH 820Begun By: AW

Conc.	Day	Replicate										D.O. (mg/L)	Analyst	Time Renewed and Fed	NOTES:
		A	B	C	D	E	F	G	H	I	J				
0	1	0									0	7.7	JMS	1355	• OD - confirmed female
	2	0									0	7.0	LAG	1320	
	3	7	6	0		0	6	5	5	6	6	6.8	LAG	1445	
	4	0	0	5	0	4	9	0			0	7.3	TE	1220	
	5	14	15	0	0	9	0	11	12	16	13	7.2	W	1215	
	6	23	21	0	0	19	19	21	20	22	17	7.3	W	1400	
	7	0				0	27	19	18	14	17	-	JMS	1225	
	8														
TOTALS		44	42	5	0	32	34	37	37	44	36				# live adults: 10, mean reprod. ± S.D.: 31.1 ± 15.6, norm. reprod. ± S.D.: 31.1 ± 15.6

Conc.	Day	Replicate										D.O. (mg/L)	Analyst	Time Renewed and Fed	NOTES:
		A	B	C	D	E	F	G	H	I	J				
20	1	0									0	7.6	JMS		
	2	0									0	7.0	LAG		
	3	0	3	1	0	0	8	6	6	0	5	6.7	LAG		
	4	0	0	4	6	7	0				0	7.2	TE		
	5	17	14	15	0	0	15	13	11	14	16	7.1	W		
	6	21	18	2	12	9	21	14	17	12	22	7.1	W		
	7	0	0	20	19	18	26	24	0	24	21	-	JMS		
	8														
TOTALS		38	35	22	18	16	44	33	34	26	37				# live adults: 10, normalized reproduction ± S.D.: 30.3 ± 9.3

Conc.	Day	Replicate										D.O. (mg/L)	Analyst	Time Renewed and Fed	NOTES:
		A	B	C	D	E	F	G	H	I	J				
40	1	0									0	7.2	JMS		Δ Dead/undeveloped neonates, number not counted
	2	0									0	6.9	LAG		
	3	0	6	5	0			0	5	7	7	6.7	LAG		
	4	5	0		0	2	6	7	0	14	0	6.9	TE		
	5	10	15	12	0	5	15	3	15	0	14	7.0	W		
	6	0	23	16	9	2	20	19	0	21	17	7.1	W		
	7	24	0	0	12	15	0	0	0	26	21	-	JMS		
	8														
TOTALS		15	44	33	9	9	41	29	20	42	38				# live adults: 10, normalized reproduction ± S.D.: 28.0 ± 13.8

Board Used	8/4B				Cup 8/10B				8/11	
	3	11	41	59	5	6	8	60	10	60

Date/time adults isolated	8/17/20	1400
Date/time neonates harvested	8/17/20	2200

Template number 60 *Fourth brood excluded from totals. Data Checked and Approved by Laboratory Manager (Initials): AW

Six day survival and reproduction used for statistical analyses.

CERIODAPHNIA DUBIA 3-BROOD CHRONIC TOXICITY TEST BENCH SHEET

PAGE 2/2

START Date/Time: 8/18/20 1305FINISH Date/Time: 8/25/20 1225Dilution Water: MH ReconTest Substance: Effluent 013Client/Project: Tri-State /NH 820Begun By: AW

Conc.	Day	Replicate										D.O. (mg/L)	Analyst	Time Renewed and Fed	NOTES:	
		A	B	C	D	E	F	G	H	I	J					
60	1	0									0	7.1	JMS	1355	Δ Dead/undeveloped neonates, number not counted	
	2	0									0	6.9	LHG	1320		
	3	8	5	0	0	6	8	7	7	5	0	6.4	LHG	1445		
	4	0	2	5	0	6	0		0	12	0	6.9	TE	1220		
	5	14	12	7	0	7	19	13	14	0	16	6.6	MJ	1215		
	6	0	2	12	0	19	6	9	22	2A	2A	7.1	W	1400		
	7	1	0	0	10	0	0	4A	1A	0	0	-	JMS	1225	Summarized Results:	
	8														# live adults	normalized reproduction $\pm$ S.D.
TOTALS		22	21	24	0	32	33	29	43	19	24				9	24.7 $\pm$ 11.3

Conc.	Day	Replicate										D.O. (mg/L)	Analyst	NOTES:	
		A	B	C	D	E	F	G	H	I	J				
80	1	0									0	6.7	JMS		
	2	0									0	6.9	LHG		
	3	6	4	0		0	3	3	0	5	3	6.3	LHG		
	4	1	0	4	0	4	0	0	1	0	0	6.8	TE		
	5	14	9	0	4	0	5	11	9	9	11	6.6	MJ		
	6	19	13	9	6	7	1	18	15	10	17	7.0	W		
	7	23	15	11	2	9	9	15	6	17	19	-	JMS	Summarized Results:	
	8													# live adults	normalized reproduction $\pm$ S.D.
TOTALS		40	26	13	10	11	9	32	25	24	31			10	22.1 $\pm$ 10.8

Conc.	Day	Replicate										D.O. (mg/L)	Analyst	NOTES:	
		A	B	C	D	E	F	G	H	I	J				
100	1	0									0	6.3	JMS		
	2	0									0	6.8	LHG		
	3	3	0					0	4	0	5	5.6	LHG		
	4	3	5	0	0	5	7	6	6	3	0	6.5	TE		
	5	6	0			0	10	7	7	9	3	6.5	MJ		
	6	14	0	0	4	13	11	13	15	14	13	6.4	W		
	7	0	15	2	0	11	0	0	15	0	0	-	JMS	Summarized Results:	
	8													# live adults	normalized reproduction $\pm$ S.D.
TOTALS		26	5	0	4	18	28	26	26	26	23			10	18.2 $\pm$ 10.9

Board Used	8/4B				Cup 8/10B				8/11	
	3	11	41	59	5	6	8	60	10	60

Date/time adults isolated	8/17/20	1400
Date/time neonates harvested	8/17/20	2200

Template number 60Data Checked and Approved by Laboratory Manager (Initials): AW

Six day survival and reproduction used for statistical analyses.

FATHEAD MINNOW 7-DAY CHRONIC TOXICITY TEST BENCH SHEET

START Date/Time: 9/10/20 1020FINISH Date/Time: 9/17/20 945Dilution Water: MH ReconTest Substance: Effluent 013Client/Project: Tri-State /NH920Begun By: AW

CONCENTRATION & REPLICATE	Number alive/day of test								#alive/ # exposed (% survival)	COMMENTS
	Start	1	2	3	4	5	6	7		
0	A	10	10	10	10	10	10	10	38/40 95%	
	B	10	10	10	10	9	9	9		
	C	10	10	10	9	9	9	9		
	D	10	10	10	10	10	10	10		
20	A	10	10	10	10	10	10	10	35/40 87.5%	
	B	10	10	10	10	8	7	7		
	C	10	10	10	10	9	8	8		
	D	10	10	10	10	10	10	10		
40	A	10	10	10	10	10	10	7	31/40 77.5%	
	B	10	10	9	8	8	8	8		
	C	10	10	10	10	9	7	7		
	D	10	10	10	10	10	10	10		
60	A	10	10	10	10	10	10	10	37/40 92.5%	
	B	10	10	10	10	10	9	9		
	C	10	10	10	9	9	9	9		
	D	10	10	10	10	10	9	9		
80	A	10	10	10	10	9	9	9	26/40 65% Replicate D excluded from all statistical analyses as it was determined to be an outlier.	
	B	10	10	7	7	7	7	10		
	C	10	10	10	9	9	9	8		
	D	10	10	6	5	4	4	3		
100	A	10	10	10	9	9	9	9	27/40 67.5%	
	B	10	10	5	4	4	4	4		
	C	10	10	9	7	6	6	6		
	D	10	10	9	8	8	8	8		
ANALYST	AW	LAG	YN	YN	TE	AW	MS	AN		
TIME FED AM	630	720	635	630	645	630	550	-		
TIME FED PM	1615	1615	1445	1500	1610	1455	1630	-		
TIME RENEWED	1020	1050	855	925	945	1125	1250	945		

Template Number 14Data Checked and Approved by Laboratory Manager (Initials): AR

CHRONIC TOXICITY WEIGHT BENCH SHEET

DRYING START Date/Time: 9/17/20 1025 Temp. 70.0 °C END Date/Time: 3^{PM} 9/18/20 1540 Temp. 60 °C

Client/Project: Tri-State /NH920

Analyst: JMS

CONTROLS & REPLICATE	Larvae Wt. (g.)	# FISH		MEAN WT Weight/Surviving Fish/Rep (mg)	MEAN WT Mean Weight/Surv. Fish (mg) ± SD	GROWTH Weight/Fish Exposed/Rep (mg.)	GROWTH Mean Wt/fish exp. (mg) ± SD
		BEGIN	END				
0	A	0.00383	10	10	0.383	0.431 ± 0.047 55 60	0.431 ± 0.047
	B	0.00398	10	9	0.442		
	C	0.00476	10	9	0.529		
	D	0.00465	10	10	0.465		
	A						
	B						
	C						
	D						
CONCENTRATION & REPLICATE	Larvae Wt. (g.)	# Fish Begin	GROWTH Weight/Fish Exposed/Rep (mg.)		GROWTH Mean Weight/Fish Exposed (mg) ± SD		
20	A	0.00559	10		0.559	0.478 ± 0.090	
	B	0.00431	10		0.431		
	C	0.00374	10		0.374		
	D	0.00548	10		0.548		
40	A	0.00342	10		0.342	0.407 ± 0.073	
	B	0.00435	10		0.435		
	C	0.00354	10		0.354		
	D	0.00497	10		0.497		
60	A	0.00454	10		0.454	0.446 ± 0.074	
	B	0.00531	10		0.531		
	C	0.00450	10		0.450		
	D	0.00350 350 ⁵⁴	10		0.350		
80	A	0.00431	10		0.431	409 0.354 ± 0.119 AN AN	
	B	0.00346	10		0.346		
	C	0.00449	10		0.449		
	D*	0.00188	10		0.188		
100	A	0.00437	10		0.437	0.406 ± 0.043	
	B	0.00342	10		0.342		
	C	0.00422	10		0.422		
	D	0.00424	10		0.424		
	A						
	B						
	C						
	D						

*Replicate D excluded from all statistical analyses as it was determined to be an outlier.

Data Checked and Approved by Laboratory Manager (Initials): AN

CETIS Summary Report

Report Date: 31 Aug-20 08:26 (p 1 of 1)
Test Code/ID: C8B2CF2 / 02-1044-7602

Ceriodaphnia 7-d Survival and Reproduction Test**GEI Consultants, Inc**

Batch ID: 02-9289-9618	Test Type: Reproduction-Survival (6-8d)	Analyst:
Start Date: 18 Aug-20 13:05	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 25 Aug-20 12:25	Species: Ceriodaphnia dubia	Brine:
Test Length: 6d 23h	Taxon: Branchiopoda	Source: In-House Culture Age:
Sample ID: 17-9496-4623	Code: NH820	Project: WET Quarterly Compliance Test (3Q)
Sample Date: 17 Aug-20 08:19	Material: Mining Effluent	Source: NPDES Permit #CO-0000213
Receipt Date: 18 Aug-20 08:45	CAS (PC):	Station: 013
Sample Age: 29h (1 °C)	Client: Tri State New Horizon Mine	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
05-1671-3755	6d Reproduction	Steel Many-One Rank Sum Test		80	100	89.44	1.25	39.9%	1
11-1789-4763	6d Survival Rate	Fisher Exact/Bonferroni-Holm Test		100	>100	n/a	1	n/a	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
15-2328-9760	6d Reproduction	Linear Interpolation (ICPIN)	✓	IC5	26.57	4.105	63.71	3.764	1
			✓	IC10	40.06	8.211	68.04	2.496	
			✓	IC15	49.48	12.32	80.98	2.021	
			✓	IC20	58.91	16.42	85.02	1.698	
			✓	IC25	70.58	22.08	n/a	1.417	
			✓	IC40	97.64	58.36	n/a	1.024	
			✓	IC50	>100	n/a	n/a	<1	
10-8137-4862	6d Survival Rate	Linear Interpolation (ICPIN)		EC5	>100	n/a	n/a	<1	1
				EC10	>100	n/a	n/a	<1	
				EC15	>100	n/a	n/a	<1	
				EC20	>100	n/a	n/a	<1	
				EC25	>100	n/a	n/a	<1	
				EC40	>100	n/a	n/a	<1	
			✓	EC50	>100	n/a	n/a	<1	

6d Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	31.1	19.91	42.29	0	44	4.947	15.65	50.31%	0.00%
20		10	30.3	23.65	36.95	16	44	2.94	9.298	30.69%	2.57%
40		10	28	18.16	37.84	9	44	4.349	13.75	49.11%	9.97%
60		10	24.7	16.65	32.75	0	43	3.559	11.26	45.57%	20.58%
80		10	22.1	14.38	29.82	9	40	3.414	10.8	48.85%	28.94%
100		10	18.2	10.4	26	0	28	3.447	10.9	59.90%	41.48%

6d 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%
20		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
40		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
60		10	0.9000	0.6738	1.0000	0.0000	1.0000	0.1000	0.3162	35.14%	10.00%
80		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%

CETIS Summary Report

Report Date: 21 Oct-20 07:55 (p 1 of 1)
Test Code/ID: DCF357C / 02-3168-3452

Fathead Minnow 7-d Larval Survival and Growth Test**GEI Consultants, Inc**

Batch ID: 06-5877-7523	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Sep-20 10:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 17 Sep-20 09:45	Species: Pimephales promelas	Brine:
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 02-6305-9087	Code: NH920	Project: WET Quarterly Compliance Test (3Q)
Sample Date: 09 Sep-20 08:45	Material: Mining Effluent	Source: NPDES Permit #CO-0000213
Receipt Date: 10 Sep-20 07:50	CAS (PC):	Station: 013
Sample Age: 26h (4 °C)	Client: Tri State New Horizon Mine	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
19-3907-7609	7d Survival Rate	Bonferroni Adj t Test		80	100	89.44	1.25	26.2%	1
09-9302-3260	Mean Dry Biomass-mg	Bonferroni Adj t Test		100	>100	n/a	1	28.0%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
04-0739-2865	7d Survival Rate	Linear Interpolation (ICPIN)	✓	EC5	12.67	2.267	94.22	7.895	1
			✓	EC10	36	n/a	118.3	2.778	
				EC15	70.2	n/a	n/a	1.425	
				EC20	81.45	50.16	n/a	1.228	
				EC25	91.82	58.85	n/a	1.089	
			✓	EC40	>100	n/a	n/a	<1	
07-1527-8247	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓	EC50	>100	n/a	n/a	<1	
				IC5	36.44	2.527	n/a	2.744	1
				IC10	79.82	4.115	n/a	1.253	
				IC15	>100	n/a	n/a	<1	
				IC20	>100	n/a	n/a	<1	
				IC25	>100	n/a	n/a	<1	
			✓	IC40	>100	n/a	n/a	<1	
			✓	IC50	>100	n/a	n/a	<1	

Test Acceptability**TAC Limits**

Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
04-0739-2865	7d Survival Rate	Control Resp	0.95	0.8	>>	Yes	Passes Criteria
19-3907-7609	7d Survival Rate	Control Resp	0.95	0.8	>>	Yes	Passes Criteria
07-1527-8247	Mean Dry Biomass-mg	Control Resp	0.4305	0.25	>>	Yes	Passes Criteria
09-9302-3260	Mean Dry Biomass-mg	Control Resp	0.4305	0.25	>>	Yes	Passes Criteria
09-9302-3260	Mean Dry Biomass-mg	PMSD	0.2804	0.12	0.3	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%
20		4	0.8750	0.6363	1.0000	0.7000	1.0000	0.0750	0.1500	17.14%	7.89%
40		4	0.7750	0.5032	1.0000	0.6000	1.0000	0.0854	0.1708	22.04%	18.42%
60		4	0.9250	0.8454	1.0000	0.9000	1.0000	0.0250	0.0500	5.41%	2.63%
80		3	0.7667	0.3872	1.0000	0.6000	0.9000	0.0882	0.1528	19.92%	19.30%
100		4	0.6750	0.3222	1.0000	0.4000	0.9000	0.1109	0.2217	32.85%	28.95%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	4	0.4305	0.356	0.505	0.383	0.476	0.0234	0.04681	10.87%	0.00%
20		4	0.478	0.3342	0.6218	0.374	0.559	0.04517	0.09034	18.90%	-11.03%
40		4	0.407	0.2911	0.5229	0.342	0.497	0.03642	0.07284	17.90%	5.46%
60		4	0.4462	0.3282	0.5643	0.35	0.531	0.0371	0.07421	16.63%	-3.66%
80		3	0.4087	0.272	0.5453	0.346	0.449	0.03176	0.05501	13.46%	5.07%
100		4	0.4062	0.3373	0.4752	0.342	0.437	0.02167	0.04335	10.67%	5.63%

COLORADO – CDPS WET TEST REPORT FORM – CHRONIC

 PERMITEE NAME: Tri State, NH2 Mine

 CDPS NO: CO-0000213

 OUTFALL: 013

 TYPE TEST: ROUTINE ☒

ACCELERATED

 TEST SPECIES: Ceriodaphnia dubia

Test Results:	Lethality	Growth	Reproduction
CONC. WITH STAT. DIFFERENCE	>100%	NA	100%
PASS/FAIL	PASS	NA	FAIL
NOEC	100%	NA	80%
PASS/FAIL	PASS	NA	FAIL
IC ₂₅	>100%	NA	70.6% (95% C.I. unavailable)
PASS/FAIL	PASS	NA	FAIL

STAT. METHOD USED: STATISTICAL DIFF.:

NOEC, LC₅₀
IC₂₅
ICp METHOD

 TEST DATE/TIME: START 8/18/20 13:05

END

8/25/20 12:25

DILUTIONS (%EFFLUENT)

	CONTROL	20%	40%	60%	80%	100%
% SURVIVAL FOR DAY: 1	100	100	100	100	100	100
2	100	100	100	100	100	100
3	100	100	100	100	100	100
4	100	100	100	100	100	100
5	100	100	100	100	100	100
6	100	100	100	90	100	100
MEAN 3 BROOD TOTAL:	31.1	30.3	28.0	24.7	22.1	18.2
7 DAY MEAN DRY WEIGHT:						
pH MAX/MIN:	8.4/8.3	8.5/8.4	8.6/8.5	8.4/8.3	8.3/8.2	8.3/8.2

 MEAN HARDNESS (mg/L) RECEIVING WATER: NA EFFLUENT: 1305 RECON WATER: 98

 MEAN ALKALINITY (mg/L) RECEIVING WATER: NA EFFLUENT: 312 RECON WATER: 69

 MEAN T. AMMONIA as N (mg/L) INITIAL EFFLUENT: 0.72 FINAL EFFLUENT: NA

 MEAN T. RESIDUAL CHLORINE (mg/L) 100%: <0.02 RECEIVING WATER USED FOR DILUTIONS? (Y/N) N

 WERE ALL TEST CONDITIONS IN CONFORMANCE WITH DIVISION GUIDELINES? (Y/N) Y

IF NO, LIST DEVIATIONS FROM TEST SPECIFICATIONS:

 ANALYST: C. Lindsey

 SIGNATURE: 

 LABORATORY: GEI Consultants, Inc./Ecological Division

 DATE: 10/13/2020

 COMMENTS: The temperature in the test differed by 3.7°C.

COLORADO – CDPS WET TEST REPORT FORM – CHRONIC

 PERMITEE NAME: Tri State, NH2 Mine

 CDPS NO: CO-0000213

 OUTFALL: 013

 TYPE TEST: ROUTINE ☒

ACCELERATED

 TEST SPECIES: Pimephales promelas

Test Results:

Lethality

Growth

Reproduction

CONC. WITH STAT. DIFFERENCE	100%	>100%	NA
PASS/FAIL	FAIL	PASS	NA
NOEC	80%	100%	NA
PASS/FAIL	FAIL	PASS	NA
IC ₂₅	91.8% (95% C.I. unavailable)	>100%	NA
PASS/FAIL	FAIL	PASS	NA

STAT. METHOD USED: STATISTICAL DIFF.:

NOEC, LC₅₀
IC₂₅
ICp METHOD

 TEST DATE/TIME: START 9/10/20 10:20

 END 9/17/20 9:45

DILUTIONS (%EFFLUENT)

	CONTROL	20%	40%	60%	80%*	100%
% SURVIVAL FOR DAY: 1	100	100	100	100	100	100
2	100	100	97.5	100	90	82.5
3	97.5	100	95	97.5	86.7	70
4	97.5	92.5	92.5	97.5	83.3	67.5
5	95	87.5	87.5	92.5	83.3	67.5
6	95	87.5	87.5	92.5	80	67.5
7	95	87.5	77.5	92.5	76.7	67.5
MEAN 3 BROOD TOTAL:						
7 DAY MEAN DRY WEIGHT:	0.431	0.478	0.407	0.446	0.409	0.406
pH MAX/MIN:	8.0/7.8	8.3/8.0	8.4/8.2	8.4/8.1	8.3/8.0	8.2/8.0

 MEAN HARDNESS (mg/L) RECEIVING WATER: NA EFFLUENT: 1233 RECON WATER: 96

 MEAN ALKALINITY (mg/L) RECEIVING WATER: NA EFFLUENT: 297 RECON WATER: 69

 MEAN T. AMMONIA as N (mg/L) INITIAL EFFLUENT: 0.83 FINAL EFFLUENT: NA

 MEAN T. RESIDUAL CHLORINE (mg/L) 100%: <0.02 RECEIVING WATER USED FOR DILUTIONS? (Y/N) N

 WERE ALL TEST CONDITIONS IN CONFORMANCE WITH DIVISION GUIDELINES? (Y/N) Y

IF NO, LIST DEVIATIONS FROM TEST SPECIFICATIONS:

 ANALYST: C. Lindsey

 SIGNATURE: 

 LABORATORY: GEI Consultants, Inc./Ecological Division DATE: 10/13/2020

 COMMENTS: *One replicate determined to be an outlier by the quartile method; replicate "D" excluded from all statistical analyses.

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

NH820-013-1

[illegible]

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

W1 820-013-2

[illegible]

4601 DTC BLVD., SUITE L100

DENVER, CO 80237

Main: (303) 662-0100 Lab: (303) 264-1120

(GEI Use) Log Number NH 820-013-3

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

[illegible]

GEI Consultants, Inc./Ecological Division
4601 DTC BLVD., SUITE L100
DENVER, CO 80237
Main: (303) 662-0100 Lab: (303) 264-1120

(GEI Use) Log Number

NI 820-013-3

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

CLIENT/PROJECT <u>ERM/R / NPDES 013</u>						TESTS REQUIRED								CHLORINE					
ADDRESS <u>27646 W. 5TH</u>						ACUTE				CHRONIC				Measured by: Client Lab					
CITY <u>Nucala</u>	STATE <u>CO</u> ZIP <u>81424</u>					C	F	D	T	C	F	A	D	A	P	H	I	A	
PHONE # <u>970-864-7316 EXT. 1109</u>						E	A	A	R	E	A	L	G	A	H	A	N	I	
PROJ. MANAGER <u>C. JOHNSON</u>	SAMPLER <u>J. CARVER</u>					O	T	H	U	O	T	H	E	E	A	N	I	A	
SAMPLE TYPE/SITE	Composite	Grab	Date Collected	Time Collected															
<u>OUTFALL 013 EFFLUENT</u>		<u>✓</u>	<u>8/20/20</u>	<u>0825</u>					<u>✓</u>	<u>✓</u>									
<u>GRAB</u>																			
PROJECT INFORMATION					LABORATORY RECEIVING INFORMATION					CLIENT RELINQUISHED BY: <u>[Signature]</u>									
CLIENT DROP OFF:					CONDITION OF SAMPLE ON RECEIPT:					DATE/TIME: <u>8/20/20</u> <u>0857</u>									
COURIER:					CUSTODY SEAL INTACT?: YES <u>X</u> NO <u> </u> N/A <u> </u>														
UPS <u>✓</u> FEDEX <u> </u> OTHER <u> </u>																			
TOTAL NUMBER OF CONTAINERS: <u>6</u>					TEMPERATURE (°C): <u>2.0</u>														
					TEMPERATURE IN RANGE (0-6°C): YES <u>✓</u> NO <u> </u>														
					IF NOT IN RANGE, SAMPLED SAME DAY, TEMP OK?: YES <u> </u> NO <u> </u>														
4 more 6 of 6																			
COMMENTS: <u>AT COLLECTION:</u>										LABORATORY RECEIVED BY: <u>[Signature]</u>									
										DATE/TIME: <u>8/21/20</u> <u>0735</u>									
<u>PHSO: 7.74</u>					<u>TEMP °C: 16.6</u>					<u>COND.us/cm: 2191</u>									

4601 DTC BLVD., SUITE L100

DENVER, CO 80237

Main: (303) 662-0100 Lab: (303) 264-1120

(GFI Use) Log Number

1-026HN

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

[illegible]

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

(GEI Use) Log Number NH960-2

[illegible]

GEI Consultants, Inc./Ecological Division
4601 DTC BLVD., SUITE L100
DENVER, CO 80237
Main: (303) 662-0100 Lab: (303) 264-1120

(GEI Use) Log Number

04920-2

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

CLIENT/PROJECT				TESTS REQUIRED				CHLORINE	
ADDRESS				ACUTE		CHRONIC		Measured by: Client ☐ Lab ☒	Comments:
CITY				F A D		T R C			
PROJECT: <u>ERM/R/NPDES 013</u>				STATE: <u>CO</u> ZIP: <u>81424</u>		F A D			
ADDRESS: <u>27646 W. 5TH</u>				CITY: <u>NUCLA</u>		T R C			
PHONE: <u>970-844-7316 EXT. 1109</u>				STATE: <u>CO</u> ZIP: <u>81424</u>		F A D			
PROJ. MANAGER: <u>C. JOHNSON</u>				SAMPLER: <u>T. CARVER</u>		T R C			
SAMPLE TYPE/SITE				Composite	Grab	Date Collected	Time Collected	TRC (mg/L)	Date/Time Measured
<u>OUTFALL 013 EFFLUENT GRAB</u>					☒	<u>9/10/20</u>	<u>0815</u>	<u>40.02</u>	<u>9/11/20 910</u>
PROJECT INFORMATION				LABORATORY RECEIVING INFORMATION					
CLIENT DROP OFF: ☐				CONDITION OF SAMPLE ON RECEIPT: <u>Good</u>					
COURIER:				CUSTODY SEAL INTACT?: YES ☒ NO ☐ N/A ☐					
UPS ☐ FEDEX ☒ OTHER ☐									
TOTAL NUMBER OF CONTAINERS: <u>4</u>				TEMPERATURE (°C): <u>5.0</u>					
CONTAINERS: <u>3+4</u>				TEMPERATURE IN RANGE (0-6°C): YES ☒ NO ☐ IF NOT IN RANGE, SAMPLED SAME DAY, TEMP OK?: YES ☐ NO ☐					
COMMENTS: <u>AT Collection:</u>				LABORATORY RECEIVED BY: <u>Jimmy Webster</u>					
<u>Phsu: 7.88 Temp °C: 13.2 Cond. µS/cm: 2,047</u>				DATE/TIME: <u>9/11/20 815</u>					

BIOASSAY LABORATORY CHAIN-OF-CUSTODY

DENVER, CO 80237

NH920-3

CLIENT/PROJECT <u>ERM/R/NPDES 013</u>		CITY <u>NUECIA</u> STATE <u>CO</u> ZIP <u>81424</u>		PHONE # <u>970-864-7316</u> EXT. <u>1109</u>		PROJ. MANAGER <u>C. JOHNSON</u> SAMPLER <u>J. CARVER</u>	
ADDRESS <u>27646 W. 5TH</u>		TOTAL NUMBER OF CONTAINERS: <u>2</u>		TEMPERATURE (°C): <u>4.0</u>		TEMPERATURE IN RANGE (0-6°C): YES ☒ NO ☐	
COURIER: <u>UPS</u> ☐ FEDEX ☒ OTHER ☐		CONDITION OF SAMPLE ON RECEIPT: <u>Good</u>		CUSTODY SEAL INTACT?: YES ☒ NO ☐ N/A ☐		IF NOT IN RANGE, SAMPLED SAME DAY, TEMP OK?: YES ☐ NO ☐	
COMMENTS: <u>AT COLLECTION:</u>		LABORATORY RECEIVED BY: <u>[Signature]</u>		DATE/TIME: <u>9/15/20</u> <u>810</u>		LABORATORY RECEIVED BY: <u>[Signature]</u>	
Phsu: <u>7.77</u>		Temp °C: <u>14.8</u>		Cond. <u>us/cm</u> : <u>2.130</u>			

From: [Crosby, Darlene](#)
To: [Crosby, Darlene](#)
Subject: Re: New Horizon Mine Notification of 3Q19 Chronic WET Results & Request for Waiver of TIE
Date: Monday, October 26, 2020 1:16:07 PM

From: Mink - CDPHE, Eric <eric.mink@state.co.us>
Sent: Thursday, October 24, 2019 2:18 PM
To: Envs Reports <Envs@tristategt.org>
Cc: Gilbreath, Chris <cgilbreath@tristategt.org>; Johnson, Chantell <cjohnson@tristategt.org>
Subject: [EXTERNAL] Re: New Horizon Mine Notification of 3Q19 Chronic WET Results & Request for Waiver of TIE

Thank you for the notification. The Division understands that the TIE/TRE is ongoing and serves as the automatic compliance for Q3. This meets the requirement.

Let me know if you have any other questions.

Thank you

On Mon, Oct 21, 2019 at 1:50 PM Envs Reports <Envs@tristategt.org> wrote:

Eric –

Please find the attached letter for New Horizon Mine. If you have any questions on this submittal, please contact me directly.

Thanks,

Chantell Johnson

Tri-State Generation and Transmission Association, Inc.

Environmental Services

Direct 303-254-3185

cjohnson@tristategt.org

--

Eric Mink
Unit Lead
Clean Water Enforcement Unit



P 303.692.2312
4300 Cherry Creek Drive South, Denver, CO 80246-1530
eric.mink@state.co.us | www.colorado.gov/cdphe/wqcd
24-hour Environmental Release/Incident Report Line: [1.877.518.5608](tel:18775185608)

