Joseph Shane Geren
Environmental Engineer

Wacker Polysilicon North America LLC
P.O. Box 446
Charleston, TN 37310-0446
Tel. 423-780-8160
Cell 423-829-7104
josephshane.geren@wacker.com

WACKER

MJB
WC-lij

October 14, 2021

Jennifer Innes
Tennessee Department of Environment and Conservation
Chattanooga Environmental Field Office
Division of Water Resources
1301 Riverfront Parkway, Suite 206
Chattanooga, TN 37402

Federal Express Tracking Number: 2848 9167 3511

Re: Wacker Polysilicon North America LLC
NPDES Permit Number #TN0081311
2021 LC50 Static 48Hr Acute Ceriodaphnia & Pimephales Biomonitoring Report & Results
Bradley County, Tennessee

Dear Ms. Innes,

Pursuant to Part I, A. Tier I of NPDES Permit Number #TN0081311, please find enclosed the 2021 LC50 Static 48Hr Acute Ceriodaphnia and LC50 Static 48Hr Acute Pimephales Biomonitoring Report and Results which were all >4.88% Non-Toxic. Please contact me at (423) 780-8160 or Jeremy Copeland at (423) 780-7953 if you have any questions.

Sincerely,

Shane Geren
Environmental Engineer
Wacker Polysilicon North America LLC

RECEIVED
OCT 18 '21
ENVIRONMENT & CONSERVATION
CHATTANOOGA FIELD OFFICE

MICROBAC®

October 12, 2021

Mr. Paul Clark
Wacker Polysilicon North America, LLC
553 Wacker Blvd NW
P.O. Box 446
Charleston, TN 37310-0446

RE: Biomonitoring Results
Sample Numbers: L1I1096, L1I1153, L1I1154, L1I1155

Dear Mr. Clark:

Enclosed are the results of the recent biomonitoring tests for Wacker Polysilicon North America LLC.. A summary of the findings is presented below.

Test Type	Acute 48-Hour Definitive			
Test Concentration	0.31, 0.61, 1.22, 2.44 and 4.88%			
Sample Collection Date / Time	Grab 1 9/28/21 13:09		Grab 2 9/28/21 19:00	
Test Organism	*Ceriodaphnia dubia*	*Pimephales promelas*	*Ceriodaphnia dubia*	*Pimephales promelas*
LC_{50}	>4.88%	>4.88%	>4.88%	>4.88%
Result	Non-Toxic	Non-Toxic	Non-Toxic	Non-Toxic
Sample Collection Date / Time	Grab 3 9/29/21 01:01		Grab 4 9/29/21 07:09	
Test Organism	*Ceriodaphnia dubia*	*Pimephales promelas*	*Ceriodaphnia dubia*	*Pimephales promelas*
LC_{50}	>4.88%	>4.88%	>4.88%	>4.88%
Result	Non-Toxic	Non-Toxic	Non-Toxic	Non-Toxic

If you have any comments or questions concerning the enclosed report, please feel free to contact me.

Sincerely,

Matthew Wagers
Biology & Microbiology Manager

Microbac Laboratories, Inc.
Louisville | Lexington | Paducah | Hazard | Evansville
3323 Gilmore Industrial Blvd. | Louisville, KY 40213 | 502.962.6400 p | 502.962.6411 f
www.microbac.com

MICROBAC®

Test Type: Acute Definitive

TOXICITY TEST REPORT SHEET
SAMPLE NUMBERS: L1I1096, L1I1153, L1I1154, L1I1155

1) **Facility/Discharger:** Wacker Polysilicon North America, LLC **Report Date:** 10/12/21

2) **Address:** Charleston, TN

3) **NPDES Permit #:** TN0081311

4) **Receiving Stream:** Hiwassee River Embayment of Chickamauga Reservoir at mile 15.9

5) **Facility Contact:** Mr. Paul Clark **Phone #:** (423) 780-8160

6) **Consultant/Testing Lab Name:** Microbac Laboratories

7) **Lab Contact:** Matthew Wagers **Phone #:** (502) 962 - 6400

8) **Outfall(s)/Station(s) Tested:** 001

9) **Average Daily Flow (MGD):** Not recorded on chain of custody record

10) **Test Species:** **#1** *Ceriodaphnia dubia* **#2** *Pimephales promelas*

11) **Species Age:** **#1** <48 hours **#2** 8 days

12) **Organism Source:** **#1** Commercial Supplier **#2** Commercial Supplier

13) **Acclimation Procedure:** N/A

14) **Test Conditions: (Static, Static-Renewal):** Static

15) **Dilution Water Type (synthetic, receiving stream):** Synthetic

16) **Aeration? (Before/During Test):** None

17) **Dechlorination:** No **Original Chlorine Level:** 0.09, 0.04, 0.03, & <0.02 mg/L

18) **Reference Toxicant Test Results:**

Species	Date	Time	Duration	Toxicant	Result (LC_{50})
Ceriodaphnia dubia	Sept. 2021	---	48 hours	NaCl	2049.7 mg/L
Pimephales promelas	Sept. 2021	---	96 hours	NaCl	7490.5 mg/L

MICROBAC®

SAMPLING SUMMARY FOR
WACKER POLYSILICON NORTH AMERICA, LLC

Outfall	Type Grab/Composite	Volume Collected	Sample Collection	Sample Temp. (°C)	Rain Fall (inches)
001	Grab 1 Grab 2	1/2 Gallon 1/2 Gallon	9/28/21 13:09 9/28/21 19:00	-0.7 -0.7	NR NR
Outfall	Type Grab/Composite	Volume Collected	Sample Collection	Sample Temp. (°C)	Rain Fall (inches)
001	Grab 3 Grab 4	1/2 Gallon 1/2 Gallon	9/29/21 01:01 9/29/21 07:09	-0.7 -0.7	NR NR

[1] NR - Not recorded on the chain of custody record.

Dates / Times of Test Performance:

Grab 1: 09/29/21 16:21 – 10/1/21 16:11
Grab 1: 09/29/21 16:40 – 10/1/21 16:48

Grab 2: 09/29/21 16:26 – 10/1/21 16:15
Grab 2: 09/29/21 16:45 – 10/1/21 16:52

Grab 3: 09/29/21 16:51 – 10/1/21 17:13
Grab 3: 09/29/21 17:01 – 10/1/21 17:01

Grab 4: 09/29/21 17:34 – 10/1/21 17:17
Grab 4: 09/29/21 17:00 – 10/1/21 17:17

MICROBAC®

Grab 1

TOXICITY TEST RESULTS FOR
WACKER POLYSILICON NORTH AMERICA, LLC
48-HOUR ACUTE Ceriodaphnia dubia DEFINITIVE TEST
CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs.	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	100
1.22% Effluent	100	100
2.44% Effluent	100	100
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

Microbac Laboratories, Inc.
Louisville | Lexington | Paducah | Hazard | Evansville
3323 Gilmore Industrial Blvd. | Louisville, KY 40213 | 502.962.6400 p | 502.962.6411 f
www.microbac.com

MICROBAC®

Grab 2

TOXICITY TEST RESULTS FOR WACKER POLYSILICON NORTH AMERICA, LLC 48-HOUR ACUTE Ceriodaphnia dubia DEFINITIVE TEST CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs.	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	100
1.22% Effluent	100	100
2.44% Effluent	100	100
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

MICROBAC®

Grab 1

TOXICITY TEST RESULTS FOR WACKER POLYSILICON NORTH AMERICA, LLC 48-HOUR ACUTE Pimephales promelas DEFINITIVE TEST CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs.	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	100
1.22% Effluent	100	100
2.44% Effluent	100	100
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

Microbac Laboratories, Inc.
Louisville | Lexington | Paducah | Hazard | Evansville
3323 Gilmore Industrial Blvd. | Louisville, KY 40213 | 502.962.6400 p | 502.962.6411 f
www.microbac.com

MICROBAC®

Grab 2

TOXICITY TEST RESULTS FOR WACKER POLYSILICON NORTH AMERICA, LLC 48-HOUR ACUTE Pimephales promelas DEFINITIVE TEST CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs.	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	100
1.22% Effluent	100	100
2.44% Effluent	100	90
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

Microbac Laboratories, Inc.
Louisville | Lexington | Paducah | Hazard | Evansville
3323 Gilmore Industrial Blvd. | Louisville, KY 40213 | 502.962.6400 p | 502.962.6411 f
www.microbac.com

MICROBAC®

Grab 3

TOXICITY TEST RESULTS FOR
WACKER POLYSILICON NORTH AMERICA, LLC
48-HOUR ACUTE Ceriodaphnia dubia DEFINITIVE TEST
CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs.	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	95
1.22% Effluent	100	100
2.44% Effluent	100	100
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

MICROBAC®

Grab 4

TOXICITY TEST RESULTS FOR WACKER POLYSILICON NORTH AMERICA, LLC 48-HOUR ACUTE Ceriodaphnia dubia DEFINITIVE TEST CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs.	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	100
1.22% Effluent	100	100
2.44% Effluent	100	95
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

Microbac Laboratories, Inc.
Louisville | Lexington | Paducah | Hazard | Evansville
3323 Gilmore Industrial Blvd. | Louisville, KY 40213 | 502.962.6400 p | 502.962.6411 f
www.microbac.com

MICROBAC®

Grab 3

TOXICITY TEST RESULTS FOR WACKER POLYSILICON NORTH AMERICA, LLC 48-HOUR ACUTE Pimephales promelas DEFINITIVE TEST CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs.	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	100
1.22% Effluent	100	100
2.44% Effluent	100	100
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

Microbac Laboratories, Inc.
Louisville | Lexington | Paducah | Hazard | Evansville
3323 Gilmore Industrial Blvd. | Louisville, KY 40213 | 502.962.6400 p | 502.962.6411 f
www.microbac.com

MICROBAC®

Grab 4

TOXICITY TEST RESULTS FOR
WACKER POLYSILICON NORTH AMERICA, LLC
48-HOUR ACUTE Pimephales promelas DEFINITIVE TEST
CONDUCTED 09/29/21 – 10/01/21

Test Solution	Percent Survival	
	24 hrs	48 hrs.
Control	100	100
0.31% Effluent	100	100
0.61% Effluent	100	100
1.22% Effluent	100	100
2.44% Effluent	100	100
4.88% Effluent	100	100

LC_{50} = >4.88% 95% Confidence Limits UL = N/A LL = N/A UL - Upper Limit LL - Lower Limit	Method used to determine LC_{50} and Confidence Limit values: Inspection

***NOTE: Acute Toxicity Units (TU_a) = 100/LC_{50}**

Microbac Laboratories, Inc.
Louisville | Lexington | Paducah | Hazard | Evansville
3323 Gilmore Industrial Blvd. | Louisville, KY 40213 | 502.962.6400 p | 502.962.6411 f
www.microbac.com

MICROBAC®

ADDITIONAL TOXICITY TEST INFORMATION

1) Submit copies of all bench sheets and statistical calculations/printouts obtained during the test(s). Data must be presented in tabular form and must include all physical and/or chemical measurements recorded during the test (e.g. temperature, conductivity, total residual chlorine, dissolved oxygen, etc.). **See appendix.**

2) Methods/Instrumentation used in chemical analysis:

Dissolved Oxygen: Standard Methods 4500 O-G, 2011

pH: Standard Methods 4500 H+ B, 2011

Conductivity: Standard Methods 2510 B, 2011

Alkalinity: Standard Methods 2320 B, 2011

Hardness: Standard Methods 2340 B, 2011

Chlorine: Hach 8167, 2014

EPA Acute Manual Edition and Date: EPA 821-R-02-012 October 2002

3) Indicate below any other relevant information that may aid in the evaluation of this report. Include any deviations from EPA methodology that were necessary for these tests as well as any sample manipulations which were performed, such as aeration, de-chlorination with sodium thiosulfate, etc. and the justification for such manipulations or deviations. Attach additional pages as needed.

Signature of person filling out form — 10/12/2021 Date

Matthew Wagers — Department Manager

Name (typed or printed)

MICROBAC®

APPENDIX

CHEMISTRY REPORT
TOXICITY BENCH SHEETS
CONTROL CHARTS
CHAIN OF CUSTODY RECORD

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1096

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446

Project Name: Biomonitoring

Project / PO Number: 9105637084
Received: 09/29/2021
Reported: 10/07/2021

Analytical Testing Parameters

Client Sample ID: Outfall 001 - Grab 1
Sample Matrix: Aqueous
Lab Sample ID: L1I1096-01

Collected By: CUSTOMER
Collection Date: 09/28/2021 13:09

Biomonitoring	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 2000.0 - Fathead Minnow Acute Toxicity								
Toxicity, Acute - P. promelas	<1.00		1.00	TU		09/29/21 1000	09/29/21 1640	NKP
Method: EPA 2002.0 - Ceriodaphnia dubia Acute Toxicity								
Toxicity, Acute - C. dubia	<1.00		1.00	TU		09/29/21 1000	09/29/21 1621	NKP

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: HACH 8167								
Chlorine, Total Residual	0.090		0.020	mg/L	H1	10/05/21 1421	10/05/21 1543	LAK
Method: SM 2320 B-2011								
Alkalinity to pH 4.5, Total as CaCO3	62		5.0	mg/L			10/01/21 0914	CPC

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.7, Rv. 4.4 (1994)								
Calcium	19		0.30	mg/L		09/30/21 1207	10/06/21 1638	JSW
Magnesium	4.5		0.60	mg/L		09/30/21 1207	10/06/21 1638	JSW
Method: SM 2340 B-2011								
Hardness, Total as CaCO3	66		2.5	mg/L		09/30/21 1207	10/06/21 1638	JSW

*Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.*

Definitions

H1: Sample received outside of holding time for these analytes.
mg/L: Milligrams per Liter
RL: Reporting Limit
TU: Toxicity Unit

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1096

Report Comments

Reviewed and Approved By:

Matthew Wagers

Matthew D. Wagers
Analyst I / Dept. Mgr.
Reported: 10/07/2021 14:56

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1153

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446

Project Name: Biomonitoring

Project / PO Number: 9105637084
Received: 09/29/2021
Reported: 10/07/2021

Analytical Testing Parameters

Client Sample ID: Outfall 001 - Grab 2
Sample Matrix: Aqueous
Lab Sample ID: L1I1153-01

Collected By: CUSTOMER
Collection Date: 09/28/2021 19:00

Biomonitoring	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 2000.0 - Fathead Minnow Acute Toxicity								
Toxicity, Acute - P. promelas	<1.00		1.00	TU		09/29/21 1000	09/29/21 1645	NKP
Method: EPA 2002.0 - Ceriodaphnia dubia Acute Toxicity								
Toxicity, Acute - C. dubia	<1.00		1.00	TU		09/29/21 1000	09/29/21 1626	NKP

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: HACH 8167								
Chlorine, Total Residual	0.040		0.020	mg/L	H1	10/05/21 1421	10/05/21 1543	LAK
Method: SM 2320 B-2011								
Alkalinity to pH 4.5, Total as CaCO3	62		5.0	mg/L			10/01/21 0914	CPC

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.7, Rv. 4.4 (1994)								
Calcium	18		0.30	mg/L		09/30/21 1207	10/06/21 1653	JSW
Magnesium	4.2		0.60	mg/L		09/30/21 1207	10/06/21 1653	JSW
Method: SM 2340 B-2011								
Hardness, Total as CaCO3	62		2.5	mg/L		09/30/21 1207	10/06/21 1653	JSW

Results in bold have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.

Definitions

H1: Sample received outside of holding time for these analytes.
mg/L: Milligrams per Liter
RL: Reporting Limit
TU: Toxicity Unit

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1153

Report Comments

Reviewed and Approved By:

Matthew Wagers

Matthew D. Wagers
Analyst I / Dept. Mgr.
Reported: 10/07/2021 14:55

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1154

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446

Project Name: Biomonitoring

Project / PO Number: 9105637084
Received: 09/29/2021
Reported: 10/10/2021

Analytical Testing Parameters

Client Sample ID: Outfall 001 - Grab 3
Sample Matrix: Aqueous
Lab Sample ID: L1I1154-01

Collected By: CUSTOMER
Collection Date: 09/29/2021 1:01

Biomonitoring	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 2000.0 - Fathead Minnow Acute Toxicity								
Toxicity, Acute - P. promelas	<1.00		1.00	TU		09/29/21 1000	09/29/21 1701	NKP
Method: EPA 2002.0 - Ceriodaphnia dubia Acute Toxicity								
Toxicity, Acute - C. dubia	<1.00		1.00	TU		09/29/21 1000	09/29/21 1651	LAK

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: HACH 8167								
Chlorine, Total Residual	0.030		0.020	mg/L	H1	10/05/21 1421	10/05/21 1543	LAK
Method: SM 2320 B-2011								
Alkalinity to pH 4.5, Total as CaCO3	60		5.0	mg/L			10/01/21 0914	CPC

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.7, Rv. 4.4 (1994)								
Calcium	18		0.30	mg/L		09/30/21 1207	10/07/21 1216	JSW
Magnesium	4.2		0.60	mg/L		09/30/21 1207	10/07/21 1216	JSW
Method: SM 2340 B-2011								
Hardness, Total as CaCO3	62		2.5	mg/L		09/30/21 1207	10/07/21 1216	JSW

Results in bold have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.

Definitions

H1: Sample received outside of holding time for these analytes.
mg/L: Milligrams per Liter
RL: Reporting Limit
TU: Toxicity Unit

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1154

Report Comments

Reviewed and Approved By:

Matthew Wagers

Matthew D. Wagers
Analyst I / Dept. Mgr.
Reported: 10/10/2021 13:59

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1155

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446

Project Name: Biomonitoring

Project / PO Number: 9105637084
Received: 09/29/2021
Reported: 10/10/2021

Analytical Testing Parameters

Client Sample ID: Outfall 001 - Grab 4
Sample Matrix: Aqueous
Lab Sample ID: L1I1155-01

Collected By: CUSTOMER
Collection Date: 09/29/2021 7:09

Biomonitoring	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 2000.0 - Fathead Minnow Acute Toxicity								
Toxicity, Acute - P. promelas	<1.00		1.00	TU		09/29/21 1000	09/29/21 1700	NKP
Method: EPA 2002.0 - Ceriodaphnia dubia Acute Toxicity								
Toxicity, Acute - C. dubia	<1.00		1.00	TU		09/29/21 1000	09/29/21 1734	LAK

Inorganics Total	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: HACH 8167								
Chlorine, Total Residual	<0.020		0.020	mg/L	H1	10/05/21 1421	10/05/21 1543	LAK
Method: SM 2320 B-2011								
Alkalinity to pH 4.5, Total as CaCO3	62		5.0	mg/L			10/01/21 0914	CPC

Metals Total by ICP	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 200.7, Rv. 4.4 (1994)								
Calcium	21		0.30	mg/L		09/30/21 1207	10/07/21 1221	JSW
Magnesium	5.2		0.60	mg/L		09/30/21 1207	10/07/21 1221	JSW
Method: SM 2340 B-2011								
Hardness, Total as CaCO3	73		2.5	mg/L		09/30/21 1207	10/07/21 1221	JSW

Results in bold have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.

Definitions

H1:	Sample received outside of holding time for these analytes.
mg/L:	Milligrams per Liter
RL:	Reporting Limit
TU:	Toxicity Unit

MICROBAC®

Microbac Laboratories, Inc., Louisville

CERTIFICATE OF ANALYSIS

L1I1155

Report Comments

Reviewed and Approved By:

Matthew Wagers

Matthew D. Wagers
Analyst I / Dept. Mgr.
Reported: 10/10/2021 13:58

Freshwater Acute Ceriodaphnia dubia Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2002.0 (Non-Potable Water)

Discharger	R POLYSILICON NORTH AM	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 1	Dilution Water Batch Number	L139066
Sample Number	L1I1096	Source Culture	L140022
Test Initiated Date/Time/Analyst	09/29/2021 16:21 EMM/KJG	Organism Age	< 48 HRS.
Test Terminated Date/Time/Analyst	10/1/2021 16:11 NKP	Date/time Sample Collected	09/28/2021 13:09

Sample (% Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
control	1	5	5	5	8.05	8.00	8.04	7.68	7.48	7.60	317.8	327.2	324.8	24.4	25.5	23.9
	2	5	5	5												
	3	5	5	5												
	4	5	5	5												
0.31	5	5	5	5	8.05	7.98	8.02	7.88	7.72	7.73	338.1	350.8	338.1	24.5	25.0	23.9
	6	5	5	5												
	7	5	5	5												
	8	5	5	5												
0.61	9	5	5	5	8.06	7.94	7.99	7.97	7.75	7.77	362.2	377.4	358.1	24.3	25.1	24.0
	10	5	5	5												
	11	5	5	5												
	12	5	5	5												
1.22	13	5	5	5	8.05	7.92	7.96	7.84	7.78	7.97	405.9	422.6	401.5	24.3	25.4	24.1
	14	5	5	5												
	15	5	5	5												
	16	5	5	5												
2.44	17	5	5	5	8.07	7.93	7.98	7.76	7.86	8.02	493.8	519.2	503.6	24.3	24.8	24.0
	18	5	5	5												
	19	5	5	5												
	20	5	5	5												
4.88	21	5	5	5	8.10	7.93	7.94	8.03	7.91	8.04	370.5	706.7	668.8	24.3	25.3	24.2
	22	5	5	5												
	23	5	5	5												
	24	5	5	5												
METER ID					P-95	P-95	P-95	DOM-22	DOM-22	DOM-22	COND-3	COND-3	COND-3	L-25	L-25	L-25
ANALYST		MM/KJ	EMM	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO	Tray ID	Randomization Template ID:

Comments:

Freshwater Acute Pimephales promelas Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2000.0 (Non-Potable Water)

Discharger	R POLYSILICON NORTH AM	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 1	Dilution Water Batch Number	L139066
Sample Number	L1I1096	Source Culture	L140021
Test Initiated Date/Time/Analyst	09/29/2021 16:40 EMM/KJG	Organism Age	8 DAYS OLD
Test Terminated Date/Time/Analyst	10/1/2021 16:48 NKP	Date/time Sample Collected	09/28/2021 13:09

Sample (%Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	1	10	10	10	8.05	8.00	7.83	7.68	7.48	7.40	317.8	327.2	335.2	24.4	25.5	23.4
	2	10	10	10												
0.31	3	10	10	10	8.05	7.98	7.80	7.88	7.72	7.34	338.1	350.8	355.9	24.5	25.0	23.6
	4	10	10	10												
0.61	5	10	10	10	8.06	7.94	7.80	7.97	7.75	7.35	362.2	377.4	375.6	24.3	25.1	23.5
	6	10	10	10												
1.22	7	10	10	10	8.05	7.92	7.83	7.84	7.78	7.33	405.9	422.6	417.8	24.3	25.4	24.0
	8	10	10	10												
2.44	9	10	10	10	8.07	7.93	7.85	7.76	7.86	7.39	493.8	519.2	507.6	24.3	24.8	24.0
	10	10	10	10												
4.88	11	10	10	10	8.10	7.93	7.87	8.03	7.91	7.29	370.5	706.7	683.4	24.3	25.3	24.2
	12	10	10	10												
METER ID					P-95	P-95	P-95	DOM-22	DOM-22	DOM-22	COND-3	COND-3	COND-3	L-25	L-25	L-25
ANALYST		MM/KJ	EMM	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO		Randomization Template ID	

Comments:

Freshwater Acute Ceriodaphnia dubia Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2002.0 (Non-Potable Water)

Discharger	R POLYSILICON NORTH AM	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 2	Dilution Water Batch Number	L139066
Sample Number	L1I1153	Source Culture	L140022
Test Initiated Date/Time/Analyst	09/29/2021 16:26 EMM/KJG	Organism Age	< 48 HRS.
Test Terminated Date/Time/Analyst	10/1/2021 16:15 NKP	Date/time Sample Collected	09/29/2021 19:00

Sample (% Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
control	1	5	5	5	8.05	8.00	7.98	7.77	7.75	8.05	317.7	325.6	329	24.6	25.3	25.0
	2	5	5	5												
	3	5	5	5												
	4	5	5	5												
0.31	5	5	5	5	8.05	7.96	7.98	7.81	7.80	7.94	349	357.9	358.5	24.6	25.1	24.9
	6	5	5	5												
	7	5	5	5												
	8	5	5	5												
0.61	9	5	5	5	8.05	7.94	8.06	7.87	7.77	8.01	381.5	394.5	402.2	24.6	25.3	24.9
	10	5	5	5												
	11	5	5	5												
	12	5	5	5												
1.22	13	5	5	5	8.06	7.97	8.04	7.93	7.82	7.90	445.5	458.4	463.9	24.6	25.2	25.0
	14	5	5	5												
	15	5	5	5												
	16	5	5	5												
2.44	17	5	5	5	8.08	7.96	7.99	7.98	7.83	7.90	581.4	599.7	598.7	24.3	25.1	25.1
	18	5	5	5												
	19	5	5	5												
	20	5	5	5												
4.88	21	5	5	5	8.13	7.96	7.98	7.98	7.90	8.10	845	885.7	875.7	24.6	24.9	25.0
	22	5	5	5												
	23	5	5	5												
	24	5	5	5												
METER ID					P-95	P-95	P-95	DOM-22	DOM-22	DOM-22	COND-3	COND-3	COND-3	L-25	L-25	L-25
ANALYST		MM/KJ	EMM	NKP	MM.EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM'/EM	MM/KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO	Tray ID	Randomization Template ID

Comments:

Freshwater Acute Pimephales promelas Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2000.0 (Non-Potable Water)

Discharger	RPOLYSILICON NORTH AM	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 2	Dilution Water Batch Number	L139066
Sample Number	L1I1153	Source Culture	L140021
Test Initiated Date/Time/Analyst	09/29/2021 16:45 EMM/KJG	Organism Age	8 DAYS OLD
Test Terminated Date/Time/Analyst	10/1/2021 16:52 NKP	Date/time Sample Collected	09/28/2021 19:00

Sample (%Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	1	10	10	10	8.05	8.00	7.83	7.77	7.75	7.15	318	325.6	321.5	24.6	25.3	24.4
	2	10	10	10												
0.31	3	10	10	10	8.05	7.96	7.82	7.81	7.80	7.04	349	357.9	353.1	24.6	25.1	24.9
	4	10	10	10												
0.61	5	10	10	10	8.05	7.94	7.82	7.87	7.77	7.21	382	394.5	392.8	24.6	25.3	24.2
	6	10	10	10												
1.22	7	10	10	10	8.06	7.97	7.83	7.93	7.82	7.19	446	458.4	448.7	24.6	25.2	24.4
	8	10	10	10												
2.44	9	10	10	8	8.08	7.96	7.83	7.98	7.83	7.41	581	599.7	603.1	24.3	25.1	24.2
	10	10	10	10												
4.88	11	10	10	10	8.13	7.96	7.87	7.98	7.90	7.22	845	885.7	838.7	24.6	24.9	24.6
	12	10	10	10												
METER ID					P-95	P-95	P-95	DOM-22	DOM-22	DOM-22	COND-3	COND-3	COND-3	L-25	L-25	L-25
ANALYST		MM/KJ	EMM	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO		Randomization Template ID	

Comments:

Microbac Laboratories, Inc. KTL Division Lexington

Freshwater Acute Ceriodaphnia dubia Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2002.0 (Non-Potable Water)

Discharger	R POLYSILICON NORTH AN	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 3	Dilution Water Batch Number	L139066
Sample Number	L111154	Source Culture	L149922
Test Initiated Date/Time/Analyst	9/29/2021 16:51 JMM/EMM	Organism Age	< 48 HRS.
Test Terminated Date/Time/Analyst	10/1/2021 17:13 LAK	Date/time Sample Collected	09/29/2021 01:01

Sample (% Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
control	1	5	5	5	8.05	7.99	7.88	7.91	7.56	7.30	318.2	326.6	770.9	25.1	25.4	24.2
	2	5	5	5												
	3	5	5	5												
	4	5	5	5												
0.31	5	5	5	5	8.04	7.95	7.88	7.75	7.63	7.87	349.9	359.4	553.5	25.2	25.3	23.9
	6	5	5	5												
	7	5	5	5												
	8	5	5	5												
0.61	9	5	5	4	8.06	7.94	7.88	7.73	7.65	7.98	387.6	398.9	431.8	25.2	25.3	23.9
	10	5	5	5												
	11	5	5	5												
	12	5	5	5												
1.22	13	5	5	5	7.76	7.94	7.91	8.05	7.82	7.88	454.4	465.9	374.7	24.9	24.8	24.0
	14	5	5	5												
	15	5	5	5												
	16	5	5	5												
2.44	17	5	5	5	8.08	7.97	7.91	7.86	7.82	8.03	-	614	335.3	24.8	25.2	24.2
	18	5	5	5												
	19	5	5	5												
	20	5	5	5												
4.88	21	5	5	5	8.00	7.95	7.88	8.00	9.81	8.12	866	901.2	310.8	25.4	24.9	24.6
	22	5	5	5												
	23	5	5	5												
	24	5	5	5												
	METER ID				P-95	P-95	P-95	DOM-22	DOM-22	DOM-22	COND-3	COND-3	COND-3	L-25	L-25	L-25
	ANALYST	MM/EM	EMM	LAK	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO	Tray ID	Randomization Template ID:

Comments:

Freshwater Acute Pimephales promelas Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2000.0 (Non-Potable Water)

Discharger	POLYSILICON NORTH AM	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 3	Dilution Water Batch Number	L139066
Sample Number	L1I1154	Source Culture	L140021
Test Initiated Date/Time/Analyst	09/29/2021 17:01 EMM	Organism Age	8 DAYS OLD
Test Terminated Date/Time/Analyst	10/1/2021 17:01 NKP	Date/time Sample Collected	09/29/2021 01:01

Sample (%Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	1	10	10	10	8.05	7.99	7.76	7.91	7.56	7.10	318	326.6	345	25.1	25.4	24.3
	2	10	10	10												
0.31	3	10	10	10	8.04	7.95	7.84	7.75	7.63	7.24	350	359.4	359.1	25.2	25.3	24.9
	4	10	10	10												
0.61	5	10	10	10	8.06	7.94	7.78	7.73	7.65	7.16	388	398.9	418.1	25.2	25.3	24.4
	6	10	10	10												
1.22	7	10	10	10	7.76	7.94	7.82	8.05	7.82	7.08	454	466	460	24.9	24.8	24.6
	8	10	10	10												
2.44	9	10	10	10	8.08	7.97	7.77	7.86	7.82	7.16	-	614	621.6	24.8	25.2	24.6
	10	10	10	10												
4.88	11	10	10	10	8.00	7.95	7.85	8.00	9.81	7.14	866	901.2	876	25.4	24.9	25.0
	12	10	10	10												
METER ID					P-95	P-95	P-95	DOM-22	DOM-22	DOM-22	COND-3	COND-3	COND-3	L-25	L-25	L-25
ANALYST		EMM	EMM	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO		Randomization Template ID	

Comments:

Freshwater Acute Ceriodaphnia dubia Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2002.0 (Non-Potable Water)

Discharger	R POLYSILICON NORTH AM	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 4	Dilution Water Batch Number	L139066
Sample Number	L1I1155	Source Culture	L140022
Test Initiated Date/Time/Analyst	9/29/2021 17:34 JMM/EMM	Organism Age	< 48 HRS.
Test Terminated Date/Time/Analyst	10/1/2021 17:17 LAK	Date/time Sample Collected	09/27/2021 00:00

Sample (% Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
control	1	5	5	5	8.00	8.01	7.86	7.79	7.62	7.21	318	324.3	561.2	25.6	25.8	24.7
	2	5	5	5												
	3	5	5	5												
	4	5	5	5												
0.31	5	5	5	5	8.04	7.99	7.90	7.90	7.70	7.74	341.6	351.9	479.5	25.7	25.6	24.2
	6	5	5	5												
	7	5	5	5												
	8	5	5	5												
0.61	9	5	5	5	8.05	7.98	7.90	7.87	7.73	7.99	371.2	383.2	239.1	25.6	25.6	24.9
	10	5	5	5												
	11	5	5	5												
	12	5	5	5												
1.22	13	5	5	5	8.06	7.93	7.91	7.91	7.68	7.94	421.7	436.2	305.2	25.6	25.7	25.0
	14	5	5	5												
	15	5	5	5												
	16	5	5	5												
2.44	17	5	5	5	8.07	7.93	7.91	7.89	7.79	8.08	522.4	543.4	465.5	25.6	25.3	24.8
	18	5	5	5												
	19	5	5	4												
	20	5	5	5												
4.88	21	5	5	5	8.10	7.90	7.961	7.64	7.80	8.19	732.3	766	420.5	25.5	25.4	24.8
	22	5	5	5												
	23	5	5	5												
	24	5	5	5												
	METER ID				P-95	P-95	P-95	DOM-2	DOM-2	DOM-2	COND-3	COND-3	COND-3	L-25	L-25	L-25
	ANALYST	MM/EM	EMM	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM.KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO	Tray ID	Randomization Template ID

Comments:

Freshwater Acute Pimephales promelas Toxicity Benchsheet

48-Hour Static Non-Renewal

EPA 821-R-02-012 Method 2000.0 (Non-Potable Water)

Discharger	R POLYSILICON NORTH AM	Dilution Water Used	Mod. Hard Synthetic Fresh
Location	OUTFALL 001 - GRAB 4	Dilution Water Batch Number	L139066
Sample Number	L1I1155	Source Culture	L140021
Test Initiated Date/Time/Analyst	09/29/2021 17:00 EMM	Organism Age	8 DAYS OLD
Test Terminated Date/Time/Analyst	10/1/2021 17:17 NKP	Date/time Sample Collected	09/27/2021 00:00

Sample (%Eff.)	Replicate ID	Live Organism at Hour			pH (Standard Units)			Dissolved Oxygen (mg/L)			Conductivity (umhos/cm)			Temperature (Deg. C)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	1	10	10	10	8.00	8.01	7.84	7.79	7.62	7.33	318	324	336.8	25.6	25.8	24.5
	2	10	10	10												
0.31	3	10	10	10	8.04	7.99	7.86	7.90	7.70	7.20	342	351.9	345.7	25.7	25.6	25.0
	4	10	10	10												
0.61	5	10	10	10	8.05	7.98	7.80	7.87	7.73	7.10	371	383.2	413.5	25.6	25.6	24.9
	6	10	10	10												
1.22	7	10	10	10	8.06	7.93	7.86	7.91	7.68	7.16	422	436.2	429.3	25.6	25.7	25.2
	8	10	10	10												
2.44	9	10	10	10	8.07	7.93	7.75	7.89	7.79	6.80	522	543	635.9	25.6	25.3	24.9
	10	10	10	10												
4.88	11	10	10	10	8.10	7.90	7.87	7.64	7.80	7.10	732	766	769.7	25.5	25.4	25.0
	12	10	10	10												
METER ID					P-95	P-95	P-95	DOM-2	DOM-2	DOM-2	COND-3	COND-3	COND-3	L-25	L-25	L-25
ANALYST		MM/KJ	EMM	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP	MM/EM	MM/KJ	NKP

Sample Water TRC (mg/L)	Control H_2O Alkalinity (mg/L)	Control H_2O Hardness (mg/L)		Undiluted Sample DO		Randomization Template ID	

Comments:

MICROBAC®

Chain of Custody

Microbac Laboratories, Inc., Louisville

Lab Manager: Matthew D. Wagers

L111096

TAT 7 days

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446
Phone: (423) 780-8320

Project Name: Biomonitoring

Project/PO Number: 9105637084
Tenatively Scheduled: 9/30/2021
Route:

Client Sample ID: Outfall 001 - Grab 1
Lab Sample ID: L111096-01
Matrix: Aqueous
Type: Grab

Sampled Date & Time: 2021 09 28 1309

Analysis	Method	Field Results/Comments	Hold Time
HARDNESS PKG. By ICP - [CALC] 200.7	varies		180.00 days
TOXICITY, ACUTE - C. DUBIA	EPA 2002.0 - Ceriodaphnia du		36.00 hrs
TOXICITY, ACUTE - P. PROMELAS	EPA 2000.0 - Fathead Minnow		36.00 hrs
ALKALINITY, TOTAL AS CaCO3	SM 2320 B-2011		14.00 days
CHLORINE, TOTAL RESIDUAL - LOU WET	HACH 8167		15.00 mins

Container(s)	Designator
250ml-Bottle HDPE	A
250ml-Bottle HDPE-HNO3	B
1Gal-Cubitainer LDPE	C

Sampled/Relinquished by: Tyler Lonas	Date/Time: 2021 0928 1327	Received by: Paul K Clark	
Printed Name: ~~CUSTOMER~~ Tyler Lonas		Printed Name: Paul Clark	
Relinquished by: Paul K Clark	Date/Time: 2021 0929 0825	Received by: ANDREW PIESHKA	
Printed Name: Paul Clark		Printed Name:	
Relinquished by: ANDREW P.	Date/Time: 9/29/21 1450	Received by:	
Printed Name:		Printed Name: Venetta Smith	

As Received at Laboratory: On Ice: Yes / No Temp: -0.7 °C Thermometer ID: C-21 Total Containers: 3.00

Microbac Laboratories may be unable to perform a portion of the requested testing in which case we will subcontract the analysis to an appropriately accredited laboratory. By signing this document you are acknowledging that your have been informed by Microbac that testing could be subcontracted and agree with this arrangement.

Notes:

Microbac Laboratories, Inc.
3323 Gilmore Industrial Blvd | Louisville, KY 40213 | 502.962.6400 p | www.microbac.com

MICROBAC®

Chain of Custody

Microbac Laboratories, Inc., Louisville

Lab Manager: Matthew D. Wagers

L111153

TAT 7 days

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446
Phone: (423) 780-8320

Project Name: Biomonitoring

Project/PO Number: 9105637084
Tenatively Scheduled: 9/30/2021
Route:

Client Sample ID: Outfall 001 - Grab 2
Lab Sample ID: L111153-01
Matrix: Aqueous
Type: Grab

Sampled Date & Time: 2021 09 28 1900

Analysis	Method	Field Results/Comments	Hold Time
HARDNESS PKG. By ICP - [CALC] 200.7	varies		180.00 days
TOXICITY, ACUTE - C. DUBIA	EPA 2002.0 - Ceriodaphnia du		36.00 hrs
TOXICITY, ACUTE - P. PROMELAS	EPA 2000.0 - Fathead Minnow		36.00 hrs
ALKALINITY, TOTAL AS CaCO3	SM 2320 B-2011		14.00 days
CHLORINE, TOTAL RESIDUAL - LOU WET	HACH 8167		15.00 mins

Container(s)	Designator
250ml-Bottle HDPE	A
250ml-Bottle HDPE-HNO3	B
1Gal-Cubitainer LDPE	C

Sampled/Relinquished by: AARON OLIVER	Date/Time: 2021 09 28 1914	Received by: Paul K Clk	
Printed Name: ~~CUSTOMER~~ JWT AARON OLIVER	2021 09 29 0720	Printed Name: Paul Clark	
Relinquished by: Paul K Clk	Date/Time: 2021 09 29 0825	Received by: ANDREW PLESHER	
Printed Name: Paul Clark		Printed Name:	
Relinquished by: ANDREW P.	Date/Time: 9-29-21 1450	Received by:	
Printed Name:		Printed Name: Venetta Smith	

As Received at Laboratory: On Ice: Yes / No Temp: -0.7 °C Thermometer ID: L-24 Total Containers: 3.00

Microbac Laboratories may be unable to perform a portion of the requested testing in which case we will subcontract the analysis to an appropriately accredited laboratory. By signing this document you are acknowledging that you have been informed by Microbac that testing could be subcontracted and agree with this arrangement.

Notes:

MICROBAC®

Chain of Custody

Microbac Laboratories, Inc., Louisville

Lab Manager: Matthew D. Wagers

L111154

TAT 7 days

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446
Phone: (423) 780-8320

Project Name: Biomonitoring

Project/PO Number: 9105637084
Tenatively Scheduled: 9/30/2021
Route:

Client Sample ID: Outfall 001 - Grab 3
Lab Sample ID: L111154-01
Matrix: Aqueous
Type: Grab

Sampled Date & Time: 2021 09 29 0101

Analysis	Method	Field Results/Comments	Hold Time
HARDNESS PKG. By ICP - [CALC] 200.7	varies		180.00 days
TOXICITY, ACUTE - C. DUBIA	EPA 2002.0 - Ceriodaphnia du		36.00 hrs
TOXICITY, ACUTE - P. PROMELAS	EPA 2000.0 - Fathead Minnow		36.00 hrs
ALKALINITY, TOTAL AS CaCO3	SM 2320 B-2011		14.00 days
CHLORINE, TOTAL RESIDUAL - LOU WET	HACH 8167		15.00 mins

Container(s)	Designator
250ml-Bottle HDPE	A
250ml-Bottle HDPE-HNO3	B
1Gal-Cubitainer LDPE	C

Sampled/Relinquished by: AARON OLIVER	Date/Time: 2021 09 29 0117	Received by: Paul K Clk	
Printed Name: ~~CUSTOMER~~ JWT AARON OLIVER	2021 09 29 0720	Printed Name: Paul Clark	
Relinquished by: Paul K Clk	Date/Time: 2021 0929 0825	Received by: ANDREW PIESHKA	
Printed Name: Paul Clark		Printed Name:	
Relinquished by: ANDREW P	Date/Time: 9 29 21 1450	Received by:	
Printed Name:		Printed Name: Venetta Smith	

As Received at Laboratory: On Ice: Yes / No Temp: 0.7 °C Thermometer ID: L-27 Total Containers: 3.00

Microbac Laboratories may be unable to perform a portion of the requested testing in which case we will subcontract the analysis to an appropriately accredited laboratory. By signing this document you are acknowledging that you have been informed by Microbac that testing could be subcontracted and agree with this arrangement.

Notes:

MICROBAC®

Chain of Custody

Microbac Laboratories, Inc., Louisville

Lab Manager: Matthew D. Wagers

L1I1155

TAT 7 days

WACKER POLYSILICON NORTH AMERICAN

Paul Clark
553 Wacker Blvd NW
Charleston, TN 37310-0446
Phone: (423) 780-8320

Project Name: Biomonitoring

Project/PO Number: 9105637084
Tenatively Scheduled: 9/30/2021
Route:

Client Sample ID: Outfall 001 - Grab 4
Lab Sample ID: L1I1155-01
Matrix: Aqueous
Type: Grab

Sampled Date & Time: 2021 09 29 0709

Analysis	Method	Field Results/Comments	Hold Time
HARDNESS PKG. By ICP - [CALC] 200.7	varies		180.00 days
TOXICITY, ACUTE - C. DUBIA	EPA 2002.0 - Ceriodaphnia du		36.00 hrs
TOXICITY, ACUTE - P. PROMELAS	EPA 2000.0 - Fathead Minnow		36.00 hrs
ALKALINITY, TOTAL AS CaCO3	SM 2320 B-2011		14.00 days
CHLORINE, TOTAL RESIDUAL - LOU WET	HACH 8167		15.00 mins

Container(s)	Designator
250ml-Bottle HDPE	A
250ml-Bottle HDPE-HNO3	B
1Gal-Cubitainer LDPE	C

Sampled/Relinquished by: Tyler Lomas	Date/Time: 2021 09 29 0736	Received by: Paul K Clark	
Printed Name: ~~CUSTOMER~~ ~~TWT~~ Tyler Lomas		Printed Name: PAUL CLARK	
Relinquished by: Paul K Clark	Date/Time: 2021 0929 0825	Received by: ANDREW PIESUKA	
Printed Name: PAUL Clark		Printed Name:	
Relinquished by: ANDREW P.	Date/Time: 9 29 21 1450	Received by:	
Printed Name:		Printed Name: Venetta Smith	

As Received at Laboratory: Ice: Yes / No Temp: -0.1 °C Thermometer ID: L-24 Total Containers: 3.00

Microbac Laboratories may be unable to perform a portion of the requested testing in which case we will subcontract the analysis to an appropriately accredited laboratory. By signing this document you are acknowledging that you have been informed by Microbac that testing could be subcontracted and agree with this arrangement.

Notes: