

APPENDIX D

Private Well Testing Results

From: dpcerrone@cerrone1.com
To: "Angie Curl"; "Terry Lively"
Cc: cmiller@cerrone1.com; "central hampshire"
Subject: Purgitsville Cancer Maps
Date: Monday, March 16, 2020 12:38:09 PM
Attachments: [image001.jpg](#)

Guys-

The maps returned from Don and associates from the PSD mark out about 68 households in the project area (out of 167 potential we believe) to have cancer. If that is just one case per household, that represents 68 people out of a population of 167 homes x 2.44 people per house 2010 county average. This represents about 17% of the local population there. According to the cancer.gov website, in 2016, 4.8% of the overall US population was living with cancer. Keep in mind that it is hard to confirm anything out of this given that the population here in Purgitsville probably significantly skews to being older, and it is impossible to compare it to the overall US average.

Nonetheless, we will stick with the language on this in the PER that we read Terry over the phone the other day. We will provide you a draft copy of this again prior to sealing the PER up and submitting it. Thanks

Dominick Paul Cerrone, PE

Director of Engineering



Cerrone Associates, Inc.

97-14th Street

Wheeling, WV 26003

www.cerrone1.com

dpcerrone@cerrone1.com

304-232-5550 x112

304-233-2512 (F)

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

2044 MEADOWBROOK ROAD
 POST OFFICE BOX 4657
 BRIDGEPORT, WV 26330
 TEL. (304) 842-5285 • FAX (304) 842-5351
 E-MAIL reliancelabs@wvdsi.net
 INTERNET www.RelianceLabs.net

RIDGEFIELD BUSINESS CENTER
 25 CRIMSON CIRCLE
 MARTINSBURG, WV 25403
 TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME Mill Creek Ruitan - Ruitan Club
 *ADDRESS 408 W. Ridge Loop Rd. Ramsey Wv. 26757
 CUSTOMER # COO100 *TEL.# 822-7842 FAX #
 *SAMPLER (S) DJ E-MAIL WIKICERMAN1@Frontier.net

SHEET NO. 1 OF 4
 *PROJECT/REMARKS
kitchen sink

LABORATORY #	*DATE	*TIME	C O M P	C O B	MATRIX W, DW, S, O, M	TEMP. ± 4°C		# OF CONTAIN.	HN03	H2SO4	HCL	NaOH	BAC-T	NO PRES.	PROJECT/REMARKS
						Yes	No								
200487	7/24/19	9:10			DW		5.2	1						X	

SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR HOLDING TIMES
 REMARKS: _____ PWS# _____
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
 SAMPLES ARE ARE NOT FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY: PRINT: <u>Dan Judy</u> SIGN: <u>[Signature]</u>	*DATE/TIME DATE: <u>3-20-19</u> TIME: <u>0910 13:20</u>	*RECEIVED BY: PRINT: <u>[Signature]</u> SIGN: <u>[Signature]</u>
*RELINQUISHED BY: PRINT: _____ SIGN: _____	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____
*RELINQUISHED BY: PRINT: _____ SIGN: _____	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____
*COURIER: TRACKING #: _____	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____

WEATHER/TEMPERATURE: _____
 RUSH STATUS (INITIAL ACCEPTANCE _____)
 *** ADDITIONAL LABORATORY FEES MAY APPLY ***
 EXTENT OF LIABILITY
 SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.
 NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IS NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER, NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.
*** TO BE COMPLETED BY CLIENT**
 ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK
 WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

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RIDGEFIELD BUSINESS CENTER
 25 CRIMSON CIRCLE
 MARTINSBURG, WV 25403
 TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME Mt. Creek Rvrtan - High
 *ADDRESS 408 W. Ridge Top Rd. Romney WV. 26757
 CUSTOMER # #0000D Purgitsville *TEL: 823-7842 FAX #
 *SAMPLER (S) DJ E-MAIL

SHEET NO. 3 OF 4
 High

LABORATORY #	*DATE	*TIME	*GRAB *COMP	MATRIX W, DW, S, O, M	TEMP. ± 4°C		# OF CONTAIN.	HNO3	H2SO4	HCL	NaOH	BAC-T	NO PRES.	*PROJECT/REMARKS
					Yes	No								
302492	3/20/19	9:50	-	DW	5.20		1						X	Bypass Faucet

REMARKS: _____ PWS# _____

SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR HOLDING TIMES
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
 SAMPLES ARE ARE NOT FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY: PRINT: <u>Purgitsville</u> SIGN: <u>[Signature]</u>	*RECEIVED BY: PRINT: <u>[Signature]</u> SIGN: <u>[Signature]</u>
*RELINQUISHED BY: DATE: <u>3-20-19</u> TIME: <u>09:50</u>	*RECEIVED BY: DATE: <u>3-20-19</u> TIME: <u>13:30</u>
*RELINQUISHED BY: DATE: _____ TIME: _____	*RECEIVED BY: DATE: _____ TIME: _____
*RELINQUISHED BY: DATE: _____ TIME: _____	*RECEIVED BY: DATE: _____ TIME: _____
*RELINQUISHED BY: DATE: _____ TIME: _____	*RECEIVED BY: DATE: _____ TIME: _____

WEATHER/TEMPERATURE: _____
 RUSH STATUS (INITIAL ACCEPTANCE) _____
 *** ADDITIONAL LABORATORY FEES MAY APPLY ***
 EXTENT OF LIABILITY
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 25 CRIMSON CIRCLE
 MARTINSBURG, WV 25403
 TEL. (304) 596-2084 • FAX (304) 596-2086



*CLIENT NAME Mill Creek Ruitan - Veach
 *ADDRESS 408 W. Ridge Loop Rd. Romney WV. 26757
 CUSTOMER # #000100 Purgitsville *TEL.# _____ FAX # _____
 *SAMPLER (S) DL E-MAIL _____

SHEET NO. 4 OF 4
 Veach

LABORATORY #	*DATE	*TIME	*COMP	*GRAB	MATRIX W, DW, S, O, M	TEMP. ± 4°C		# OF CONTAIN.	HNO3	H2SO4	HCL	NaOH	BAC-T	NO PRES.	*PROJECT/REMARKS
						Yes	No								
302493	3/20/19	10:10			DW		5.0	1							Bypass Softener Bathroom

SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR HOLDING TIMES
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 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
 SAMPLES ARE ARE NOT FOR REGULATORY COMPLIANCE PURPOSES

REMARKS: _____
 PWS# _____

PRINT: <u>Dan Twigg</u>	DATE: <u>3-20-19</u>	*RECEIVED BY: <u>[Signature]</u>
SIGN: <u>[Signature]</u>	TIME: <u>1010 1300</u>	SIGN: _____
PRINT: _____	DATE: _____	*RECEIVED BY: _____
SIGN: _____	TIME: _____	SIGN: _____
PRINT: _____	DATE: _____	*RECEIVED BY: _____
SIGN: _____	TIME: _____	SIGN: _____
PRINT: _____	DATE: _____	*RECEIVED BY: _____
SIGN: _____	TIME: _____	SIGN: _____
PRINT: _____	DATE: _____	*RECEIVED BY: _____
SIGN: _____	TIME: _____	SIGN: _____

WEATHER/TEMPERATURE: _____
 RUSH STATUS (INITIAL ACCEPTANCE _____)
 *** ADDITIONAL LABORATORY FEES MAY APPLY***

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*** TO BE COMPLETED BY CLIENT**



Pace Analytical Services, LLC
1638 Roseytown Road - Sullies 2,3,4
Greensburg, PA 16601
(724)850-5600

April 08, 2019

Ms. Tenley Miller
Reliance Laboratories, Inc.
2044 Meadowbrook Road
P.O. Box 4657
Bridgeport, WV 26330

RE: Project: 302487/302493
Pace Project No.: 30285346

Dear Ms. Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Laura M. Pirilla
laura.pirilla@pacelabs.com
(724)850-5616
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 302487/302493
Pace Project No.: 30285346

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Ohio/TNI Certification #: PA200002-010
Puerto Rico Certification #: 65-00282
Pennsylvania/TNI Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9864C
Wisconsin Approve List for Rad
Wyoming Certification #: 8 TMS-L

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SAMPLE SUMMARY

Project: 302487/302493
Pace Project No.: 30285346

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30285346001	302487-2019-DW	Drinking Water	03/20/19 09:10	03/21/19 09:40
30285346002	302491-2019-DW	Drinking Water	03/20/19 09:30	03/21/19 09:40
30285346003	302492-2019-DW	Drinking Water	03/20/19 09:50	03/21/19 09:40
30285346004	302493-2019-DW	Drinking Water	03/20/19 10:10	03/21/19 09:40

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SAMPLE ANALYTE COUNT

Project: 302487/302493
Pace Project No.: 30285346

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30285346001	302487-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1
30285346002	302491-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1
30285346003	302492-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1
30285346004	302493-2019-DW	EPA 903.1	MK1	1
		EPA 904.0	JLW	1

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 302487/302493
Pace Project No.: 30285346

Method: EPA 903.1
Description: 903.1 Radium 226
Client: Reliance Laboratories, Inc.
Date: April 08, 2019

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of-custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 302487/302493
Pace Project No.: 30285346

Method: EPA 904.0
Description: 904.0 Radium 228
Client: Reliance Laboratories, Inc.
Date: April 08, 2019

General Information:

4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of-custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 302487/302493
Pace Project No.: 30285346

Sample: 302487-2019-DW Lab ID: 30285346001 Collected: 03/20/19 09:10 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:

Comments: * Sample collection dates and times were not present on the sample containers.
* Sampler's signature not present on the subcontracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.793 ± 0.549 (0.711) C:NA T:95%	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	0.588 ± 0.282 (0.508) C:79% T:91%	pCi/L	04/05/19 12:27	15262-20-1	

Sample: 302491-2019-DW Lab ID: 30285346002 Collected: 03/20/19 09:30 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:

Comments: * Sample collection dates and times were not present on the sample containers.
* Sampler's signature not present on the subcontracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.207 ± 0.302 (0.508) C:NA T:91%	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	0.506 ± 0.300 (0.576) C:77% T:88%	pCi/L	04/05/19 12:27	15262-20-1	

Sample: 302492-2019-DW Lab ID: 30285346003 Collected: 03/20/19 09:50 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:

Comments: * Sample collection dates and times were not present on the sample containers.
* Sampler's signature not present on the subcontracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.388 ± 0.400 (0.600) C:NA T:91%	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	0.336 ± 0.336 (0.706) C:79% T:85%	pCi/L	04/05/19 12:27	15262-20-1	

Sample: 302493-2019-DW Lab ID: 30285346004 Collected: 03/20/19 10:10 Received: 03/21/19 09:40 Matrix: Drinking Water
PWS: Site ID: Sample Type:

Comments: * Sample collection dates and times were not present on the sample containers.
* Sampler's signature not present on the subcontracted COC from Reliance.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0671 ± 0.132 (0.182) C:NA T:97%	pCi/L	04/02/19 21:35	13982-63-3	
Radium-228	EPA 904.0	0.341 ± 0.350 (0.738) C:78% T:86%	pCi/L	04/05/19 12:28	15262-20-1	

EPA - combined 226 + 228 limit of 5 pCi/L

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 302487/302493
 Pace Project No.: 30285346

QC Batch: 334940 Analysis Method: EPA 904.0
 QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
 Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

METHOD BLANK: 1629907 Matrix: Water
 Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.922 ± 0.385 (0.611) C:78% T:88%	pCi/L	04/05/19 12:25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 302487/302493
Pace Project No.: 30285346

QC Batch: 335112 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

METHOD BLANK: 1630779 Matrix: Water
Associated Lab Samples: 30285346001, 30285346002, 30285346003, 30285346004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.383 (0.829) C:NA T:95%	pCi/L	04/02/19 21:22	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 302487/302493
Pace Project No.: 30285346

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNIC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Act - Activity
Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.
Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.
(MDC) - Minimum Detectable Concentration
Trac - Tracer Recovery (%)
Carr - Carrier Recovery (%)
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAP Institute.

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RIDGEFIELD BUSINESS CENTER
 25 CRIMSON CIRCLE
 MARTINSBURG, WV 25403
 TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME Reliance Laboratories
 *ADDRESS _____
 CUSTOMER # _____ *TEL. # _____ FAX # _____
 *SAMPLER (S) D Judy E-MAIL _____

Reclaimable 828

SHEET NO. _____ OF _____

LABORATORY #	*DATE	*TIME	*C/O	*R/O	MATRIX W, DW, S, O, M	TEMP. $\pm 4^{\circ}\text{C}$		*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.							*PROJECT/REMARKS	
						Yes	No															
	3/20	9:10	X		DW			1	1													302487-2019-DW 01
		9:30																				302491-2019-DW 02
		9:50																				302492-2019-DW 03
		10:10																				302493-2019-DW 04

WO#: 30285346

SAMPLES DO DO NOT _____ MEET USEPA GUIDELINES FOR HOLDING TIMES
 SAMPLES DO DO NOT _____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
 SAMPLES DO DO NOT _____ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
 SAMPLES ARE _____ ARE NOT FOR REGULATORY COMPLIANCE PURPOSES

REMARKS: _____ PWS# _____

*RELINQUISHED BY: PRINT: <u>Jessica Delgado</u> SIGN: <u>Jessica Delgado</u>	*DATE/TIME DATE: <u>3-20-19</u> TIME: <u>1700</u>	*RECEIVED BY: PRINT: <u>Fedex</u> SIGN: <u>Fedex</u>
*RELINQUISHED BY: PRINT: <u>Fedex</u> SIGN: <u>Fedex</u>	*DATE/TIME DATE: <u>3-21-19</u> TIME: <u>0940</u>	*RECEIVED BY: PRINT: <u>Emily Tyson</u> SIGN: <u>Emily Tyson</u>
*RELINQUISHED BY: PRINT: _____ SIGN: _____	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____
*COURIER: TRACKING#: _____	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____

WEATHER/TEMPERATURE: _____
 RUSH STATUS (INITIAL ACCEPTANCE _____)
 *** ADDITIONAL LABORATORY FEES MAY APPLY ***
EXTENT OF LIABILITY
 SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.
 NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IS NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER, NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.
*** TO BE COMPLETED BY CLIENT ***
 ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK
 WHITE - LABORATORY YELLOW - CLIENT



RELiance LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV www.RelianceLabs.net MARTINSBURG, WV

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

Wednesday, March 20, 2019

Pace Analytical Services
1638 Roseytown Road
Suites 2,3,4
Greensburg, PA 15601

30285346

Please analyze the following sample for: **Radium 226-228**

Please identify as:

302487-2019-DW	Date/Time Sampled: 3/20/2019 9:10
302491-2019-DW	Date/Time Sampled: 3/20/2019 9:30
302492-2019-DW	Date/Time Sampled: 3/20/2019 9:50
302493-2019-DW	Date/Time Sampled: 3/20/2019 10:10

Sampled by: D.Judy

PLEASE SEND RESULTS & INVOICE TO:

RELiance LABORATORIES, INC.
ATTN: TENLEY MILLER
P.O. BOX 4657
BRIDGEPORT, WV 26330
tmiller@wvdsi.net

Thank You

Pittsburgh Lab Sample Condition Upon Receipt

Project # **30285346**

Client Name: **Reliance Labs**

Label	ET
LIMS Login	ET

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____
 Tracking #: **777754429147**
 Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No
 Thermometer Used: **11** Type of Ice: (Wet) Blue None
 Cooler Temperature Observed Temp: **2.0** °C Correction Factor: **0.0** °C Final Temp: **2.0** °C
 Temp should be above freezing to 6°C

Comments:	Yes	No	pH paper Lot#	Date and initials of person examining contents:
Chain of Custody Present:		N/A	10D3581	ET 3-21-19
Chain of Custody Filled Out:				
Chain of Custody Relinquished:				
Sampler Name & Signature on COC:				
Sample Labels match COC:				
-Includes date/time/ID Matrix:				
Samples Arrived within Hold Time:				
Short Hold Time Analysis (<72hr remaining):				
Rush Turn Around Time Requested:				
Sufficient Volume:				
Correct Containers Used:				
-Pace Containers Used:				
Containers Intact:				
Orthophosphate field filtered				
Hex Cr Aqueous Compliance/PDES sample field filtered				
Organic Samples checked for dechlorination:				
Filtered volume received for Dissolved tests				
All containers have been checked for preservation.				
All containers needing preservation are found to be in compliance with EPA recommendation.				
exceptions: VOA, coliform, TOC, O&G, Phenolics				
Initial when completed			ET	Date/time of preservation
Lot # of added preservative				
Headspace in VOA Vials (>8mm):				
Trip Blank Present:				
Trip Blank Custody Seals Present				
Rad Samples Screened < 0.5 mrem/hr				
Initial when completed			ET	Date: 3-21-19

Client Notification/ Resolution: _____
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____
 Contacted By: _____

A check in this box indicates that additional information has been stored in reports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)
 *PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

For uranium mill tailing sites with radium contamination, EPA has established a radium level of 5 picoCuries per gram (pCi/g) above background as a protective health-based level for cleanup of soil in the top 15 centimeters. These regulations under 40 Code of Federal Regulations (CFR) Part 192.12 are often Applicable or Relevant and Appropriate Requirements (ARARs) at Superfund sites. The EPA document "Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA Sites" provides guidance to EPA staff regarding when the use of 5 picoCuries per gram (pCi/g) is an ARAR or otherwise recommended cleanup level for any 15 centimeters of subsurface radium-contaminated soil other than the first 15 centimeters. This document is available online at:

<http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/umtrcagu.pdf>.

If regulations under 40 CFR Part 192.12 are an ARAR for radium in soil at a Superfund site, then Nuclear Regulatory Commission regulations for uranium mill tailing sites under 10 CFR Part 40 Appendix A, I, Criterion 6(6), may be an ARAR at the same site. Criterion 6(6) requires that the level of radiation, called a "benchmark dose," that an individual would receive be estimated after that site was cleaned up to the radium soil regulations under 40 CFR Part 192.12. This benchmark dose then becomes the maximum level of radiation that an individual may be exposed to from all radionuclides, except radon, in both the soil and buildings at the site. The EPA document "Remediation Goals for Radioactively Contaminated CERCLA Sites Using the Benchmark Dose Cleanup Criterion 10 CFR Part 40 Appendix A, I, Criterion 6(6)" provides

guidance to EPA staff regarding how Criterion 6(6) should be implemented as an ARAR at Superfund sites, including using a radium soil cleanup level of 5 pCi/g in both the surface and subsurface in estimating a benchmark dose. This document is available online at:

<http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/part40.pdf>.

EPA has established a Maximum Contaminant Level (MCL) of 5 picoCuries per liter (pCi/L) for any combination of radium-226 and radium-228 in drinking water. EPA has also established a MCL of 15 pCi/L for alpha particle activity, excluding radon and uranium, in drinking water. Radium-226 is covered under this MCL.

For more information about how EPA addresses radium at Superfund sites

Contact Stuart Walker of EPA:

(703) 603-8748 or walker.stuart@epa.gov,

or visit EPA's Superfund Radiation Webpage:

<http://www.epa.gov/superfund/resources/radiation/>



Reliance Laboratories, Inc.
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Martinsburg Laboratory
Ridgefield Business Center | 25 Crimson Circle
Martinsburg, WV 25403
Phone: 304.596.2084 | Fax: 304.596.2086

Certifications: WV Department of Health #: 00354, 00443 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

LABORATORY REPORT SUMMARY

Client: C0010D

Thursday, November 15, 2018

Mill Creek Ruritan Club
408 West Ridge Loop Rd.
Romney

WV 26757

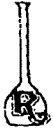
Total Number of Pages: 9
(Not Including C.O.C.)
Page 1 of 9

Table with 4 columns: Lab ID, Sample ID, Sample ID 2, Sample Date. Includes handwritten notes like '2 miles south of Huffman Rd' and '0.7 mile west of 220 m Huffman'.

Handwritten notes: 'on US 220', 'old Mantam Rd (1/4 mile south of Huffman Rd turn off on Rt 220 - out 1/2 mile on Old Mtn Rd. (near uranium))', 'in between Huffman & Old Mtn Rd on 220', '(2.5 miles south of test #1)'

The enclosed results have been analyzed according to the referenced method and SOP. Any deviations to the method have been noted on the report. Unless otherwise noted, all results have been verified to meet quality control requirements of the method. All analysis performed by Reliance Laboratories, Bridgeport, WV or Reliance Laboratories, Martinsburg, WV, as noted on laboratory report. This report may not be reproduced, except in full, without written approval of Reliance Laboratories, Inc.

Report Reviewed By [Signature] Digitally signed by Tenley Miller
Date: 2018.11.16
10:06:58 -05'00'



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ENVIRONMENTAL ANALYSTS AND CONSULTANTS

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www.RelianceLabs.net

MARTINSBURG, WV

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MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

PURGEABLE ORGANICS – CHAIN OF CUSTODY & SAMPLE COLLECTION PROCEDURE

1. Samples should be grab samples and should be taken from a cold water tap where drinking water or water for human consumption is normally obtained.
2. Sample bottles should be handled aseptically to prevent contamination of samples. Do not touch the inside of the bottles or caps. Do not allow either to touch the faucet. Do not remove any preservatives present.
3. Open the cold water tap and allow water to run evenly for three to five minutes in order to equilibrate system. Generally, the water temperature will stabilize indicating complete equilibration.
4. Collect grab samples in 40 ml glass vials. Slowly fill each container to overflowing, place the Teflon lined cap on the vial and seal. Invert the sample to check for air bubbles, if bubbles are present remove cap and continue filling vial. Fill all empty vials.
5. Return trip blank unaltered to the laboratory with sample vials.
6. Carefully pack all sample containers in ice to maintain 4 degrees Celsius.
7. Complete all information below and return with sample and trip blank to the laboratory.

Please provide all necessary information.

SAMPLING INFORMATION – COMPLETE THIS DOCUMENT IN INDELIBLE INK

Firm: _____ Contact: Donald Judy

Address: 408 West Ridge Loop Road Romney WV 26757

Telephone: 304-822-7842 Fax: _____

Public Water System (PWS) I.D.: _____

Describe Sample Location: 4651 Purgitsville Pike Purgitsville WV 26852

Sample Date: 10-29-18 Sample Time: 9:15 AM Collected By: Donald Judy

Sample Witnessed By: Tom High Date Received at Laboratory: _____

Preserved at Lab (Y/N): _____ Proper Preservatives: _____ Proper Containers Used: _____

Holding Times Observed: _____ Disinfectant Residual: _____

Sample Temperature Upon Receipt: _____ Received By: _____

Shipper/Tracking #: _____

Results Authorized By: _____ Date: _____



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Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018
 Page 2 of 9

Romney, WV 26757

Lab Number: 296157-2018-DW Sample ID: Mill Creek #1
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics							
Total Lead	J 0.00080	mg/l	EPA 200.8 R5.4	11/1/2018	12:58 TH	0.0005	0.001
Total Iron	✓ 0.027	mg/l	EPA 200.8 R5.4	11/1/2018	12:58 TH	0.004	0.01
Total Arsenic	0.0094	mg/l	EPA 200.8 R5.4	11/1/2018	12:58 TH	0.001	0.005

Iron - secondary recommended limit = 0.30 mg/L
Arsenic ~~limit~~ 0.01 mg/L.
Lead - 15 µg/L limit

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 9:10
 Sample Submitted By: D. JUDY
 Date Sample Received: 10/29/2018 13:53
 Sample temp. upon receipt: 4.2 Deg C

ND = Not Detected at the MDL or MRL
 MRL - Minimum Reporting Limit
 J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)



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Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018

Page 3 of 9

Romney, WV 26757

Lab Number: 296157-2018-DW Sample ID: Mill Creek #1
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons							
TPH - GRO	ND	mg/l	SW8015B/5030B	11/5/2018	15:59 TM	0.04	0.5
4-Bromochlorobenzene (Surrogate)	99.1	%	SW8015B	11/5/2018	15:59 TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018	9:27 TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018	9:27 TM	0.54	1
o-Terphenyl (Surrogate)	83.1	%	SW8015B	11/6/2018	9:27 TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 9:10

Sample Submitted By: D. JUDY

Date Sample Received: 10/29/2018 13:53

Sample temp. upon receipt: 4.2 Deg C

ND = Not Detected at the MDL or MRL

MDL - Minimum Detectable Limit

MRL - Minimum Reporting Limit

MCL - Maximum Contaminant Level, USEPA Regulated

J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

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Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018
 Page 4 of 9

Romney, WV 26757

Lab Number: 296158-2018-DW Sample ID: Faggili #2
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: <u>Inorganics</u>							
Total Lead	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:03 TH	0.0005	0.001
Total Iron	0.530	mg/l	EPA 200.8 R5.4	11/1/2018	13:03 TH	0.004	0.01
Total Arsenic	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:03 TH	0.001	0.005

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:50
 Sample Submitted By: D. JUDY
 Date Sample Received: 10/29/2018 13:53
 Sample temp. upon receipt: 4.2 Deg C

ND = Not Detected at the MDL or MRL
 MRL - Minimum Reporting Limit

MDL - Minimum Detectable Limit
 MCL - Maximum Contaminant Level, USEPA Regulated J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)



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Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018
 Page 5 of 9

Romney, WV 26757

Lab Number: 296158-2018-DW Sample ID: Faggili #2
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons							
TPH - GRO	ND	mg/l	SW8015B/5030B	11/6/2018 9:22	TH	0.04	0.5
4-Bromochlorobenzene (Surrogate)	91.2	%	SW8015B	11/6/2018 9:22	TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018 10:08	TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018 10:08	TM	0.54	1
o-Terphenyl (Surrogate)	110	%	SW8015B	11/6/2018 10:08	TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:50
 Sample Submitted By: D. JUDY
 Date Sample Received: 10/29/2018 13:53
 Sample temp. upon receipt: 4.2 Deg C
 MDL - Minimum Detectable Limit
 MCL - Maximum Contaminant Level, USEPA Regulated

ND = Not Detected at the MDL or MRL
 MRL - Minimum Reporting Limit
 J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)



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Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018
 Page 6 of 9

Romney, WV 26757

Lab Number: 296159-2018-DW **Sample ID:** High #3
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics							
Total Lead	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:08 TH	0.0005	0.001
Total Iron	X 1.28	mg/l	EPA 200.8 R5.4	11/1/2018	13:08 TH	0.004	0.01
Total Arsenic	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:08 TH	0.001	0.005

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:30
 Sample Submitted By: D. JUDY
 Date Sample Received: 10/29/2018 13:53

Sample temp. upon receipt: 4.2 Deg C ND = Not Detected at the MDL or MRL

MDL - Minimum Detectable Limit MRL - Minimum Reporting Limit

MCL - Maximum Contaminant Level, USEPA Regulated J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)



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Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018
 Page 7 of 9

Romney, WV 26757

Lab Number: 296159-2018-DW Sample ID: High #3
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons							
TPH - GRO	ND	mg/l	SW8015B/5030B	11/6/2018 9:53	TM	0.04	0.5
4-Bromochlorobenzene (Surrogate)	102	%	SW8015B	11/6/2018 9:53	TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018 10:49	TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018 10:49	TM	0.54	1
o-Terphenyl (Surrogate)	113	%	SW8015B	11/6/2018 10:49	TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:30
 Sample Submitted By: D. JUDY
 Date Sample Received: 10/29/2018 13:53

Sample temp. upon receipt: 4.2 Deg C ND = Not Detected at the MDL or MRL

MDL - Minimum Detectable Limit MRL - Minimum Reporting Limit

MCL - Maximum Contaminant Level, USEPA Regulated J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)



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Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018

Page 8 of 9

Romney, WV 26757

Lab Number: 296160-2018-DW **Sample ID:** White Pine #4
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics							
Total Lead	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:12 TH	0.0005	0.001
Total Iron	0.219	mg/l	EPA 200.8 R5.4	11/1/2018	13:12 TH	0.004	0.01
Total Arsenic	ND	mg/l	EPA 200.8 R5.4	11/1/2018	13:12 TH	0.001	0.005

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:50
 Sample Submitted By: D. JUDY
 Date Sample Received: 10/29/2018 13:53

Sample temp. upon receipt: 4.2 Deg C

ND = Not Detected at the MDL or MRL

MDL - Minimum Detectable Limit

MRL - Minimum Reporting Limit

MCL - Maximum Contaminant Level, USEPA Regulated

J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)



Reliance Laboratories, Inc.
 2044 Meadowbrook Road | P.O. Box 4657
 Bridgeport, WV 26330
 Phone: 304.842.5285 | Fax: 304.842.5351

Martinsburg Laboratory
 Ridgefield Business Center | 25 Crimson Circle
 Martinsburg, WV 25403
 Phone: 304.596.2084 | Fax: 304.596.2086

Certifications: WV Department of Health #: 00354, 00443 | WV Department of Environmental Protection #: 158, 181
 MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

Mill Creek Ruritan Club
 408 West Ridge Loop Rd.

Thursday, November 15, 2018
 Page 9 of 9

Romney, WV 26757

Lab Number: 296160-2018-DW Sample ID: White Pine #4
 Mill Creek Ruritan Club

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons							
TPH - GRO	ND	mg/l	SW8015B/5030B	11/6/2018	10:52 TM	0.04	0.5
4-Bromochlorobenzene (Surrogate)	76.7	%	SW8015B	11/6/2018	10:52 TM		
TPH - DRO	ND	mg/l	SW8015B/3535A	11/6/2018	11:30 TM	0.68	1
TPH - ORO	ND	mg/l	SW8015B/3535A	11/6/2018	11:30 TM	0.54	1
o-Terphenyl (Surrogate)	84.3	%	SW8015B	11/6/2018	11:30 TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 10/29/2018 10:50

Sample Submitted By: D. JUDY

Date Sample Received: 10/29/2018 13:53

Sample temp. upon receipt: 4.2 Deg C

ND = Not Detected at the MDL or MRL

MDL - Minimum Detectable Limit

MRL - Minimum Reporting Limit

MCL - Maximum Contaminant Level, USEPA Regulated

J = Reported value is an estimate because concentration is less than the MRL

*Method Code: STANDARD METHODS ONLINE ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.

NOTE: ND or Not Detected indicates that the analytical value obtained is below the minimum detectable limit (MDL)

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

2044 MEADOWBROOK ROAD
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL: reliance@wvdl.net
INTERNET: www.RelianceLabs.net

25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME: Donald Judy
*ADDRESS: 408 West Ridge Loop Rd Romney WV 26757
*CUSTOMER # : 00010D
*SAMPLER(S): Donald Judy

*TEL: # 304-842-7842 FAX #

LABORATORY #	DATE	TIME	MATRIX W, DW, S, O, M	TEMP. 4°C		# OF CONTAIN.	HN03	H2S04	HCL	NACOH	BAC-T	NO PRES.	SHEET NO.	OF	PROJECT/REMARKS	
				Yes	No											
0916157	10/21/18	9:10	DW	42°	U	U	1P		3v			g/p			MILLCREEK RUNTAN #1	
0916158		10:50			U	U	1P		3v			g/p			Faggili #2	
0916159		10:30			U	U	1P		3v			g/p			High #3	
0916160		10:50	V		U	U	1P		3v			g/p			White Pine #4	

SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR HOLDING TIMES
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
 SAMPLES ARE ARE NOT FOR REGULATORY COMPLIANCE PURPOSES

REMARKS:
 *Please return samples PWS#
 W/ in 5 days of collection

RELINQUISHED BY: PRINT: <u>[Signature]</u> SIGN: <u>[Signature]</u>	*DATE/TIME DATE: 10-21-18 TIME: 13:53	*RECEIVED BY: PRINT: <u>[Signature]</u> SIGN: <u>[Signature]</u>
RELINQUISHED BY: PRINT: _____ SIGN: _____	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____
RELINQUISHED BY: PRINT: _____ SIGN: _____	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____
*COURIER: TRACKING #:	*DATE/TIME DATE: _____ TIME: _____	*RECEIVED BY: PRINT: _____ SIGN: _____

WEATHER/TEMPERATURE:
 RUSH STATUS (INITIAL ACCEPTANCE)
 ... ADDITIONAL LABORATORY FEES MAY APPLY ...
EXTENT OF LIABILITY
 SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE LABORATORIES, INC. SHALL BE LIMITED TO THE SAMPLE PROVIDING ADEQUATE SAMPLE REMOVAL OR A REFUND OF THE ANALYTICAL FEE IN NO EVENT WILL RELIANCE LABORATORIES, INC. BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.
 NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IS NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME. HOWEVER, NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK
TO BE COMPLETED BY CLIENT
 WHITE - LABORATORY YELLOW - CLIENT



RELIANCE LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV

www.RelianceLabs.net

MARTINSBURG, WV

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

WATER SUPPLY SAMPLING – CHAIN OF CUSTODY & SAMPLE COLLECTION PROCEDURE

1. Samples should be grab samples and should be taken from a cold water tap where drinking water or water for human consumption is normally obtained.
2. Sample bottles should be handled aseptically to prevent contamination of samples. Do not touch the inside of the bottles or caps. Do not allow either to touch the faucet.
3. Open the cold water tap and allow water to run evenly for three to five minutes in order to equilibrate system. Generally, the water temperature will stabilize indicating complete equilibration.
4. Fill all containers completely allowing no air space to remain.

MICROBIOLOGICAL/BACTERIOLOGICAL SAMPLES ONLY

Collect at least 100 ml of sample (fill to the mark on the sample container). Allow one (1) inch of airspace in the sample container. Water taps selected for sampling must be free of aerators, strainers, hose attachments, mixing devices and purification devices. **THE SAMPLE CONTAINER IS STERILE. The pill included in the container removes chlorine residual.** Samples should be analyzed within 30 hours of collection (HPC 8 hours). Samples should remain < or = 10 degrees C during shipment.

5. Close bottles tightly. Write name, date, time of sampling, and area where sample was taken on the bottle and on the Chain-of-Custody form.
6. Carefully pack all sample containers when shipping to the laboratory.
7. Ship/deliver to the address above.

CAUTION: Some sample bottles contain stabilizing reagents which are corrosive and should be handled carefully. If reagents come in contact with skin, flush with water.

SAMPLING INFORMATION – COMPLETE THIS DOCUMENT IN INDELIBLE INK

Firm: _____ Contact: Donald Judy
 Address: 408 West Ridge Loop Road Romney WV 26757
 Telephone: 304-822-7842 Fax: _____ Public Water System (PWS) I.D.: _____
 Describe Sample Location: 4651 Burgitville Pike Burgitville WV 26852
 Sample Date: 12-29-18 Sample Time: 9:15 AM Collected By: Donald Judy
 Sample Witnessed By: Tom High Date Received at Laboratory: _____
 Preserved at Lab (Y/N): _____ Proper Preservatives: _____ Proper Containers Used: _____
 Holding Times Observed: _____ Disinfectant Residual: _____ Received By: _____
 Sample Temperature Upon Receipt: _____ Shipper/Tracking #: _____
 Results Authorized By: _____ Date: _____

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Nashville
2960 Foster Creighton Drive
Nashville, TN 37204
Tel: (615)726-0177

TestAmerica Job ID: 490-162266-1
Client Project/Site: RSK / 296157, 296158, 296159, 296160

For:
Reliance Laboratories Inc
PO BOX 4657
Bridgeport, West Virginia 26330

Attn: Tenley Miller

Jennifer Gambill

Authorized for release by:
11/8/2018 5:30:24 PM

Jennifer Gambill, Project Manager I
(615)301-5044
jennifer.gambill@testamericainc.com

LINKS

Review your project results through
Total Access

Have a Question?

Ask The Expert

Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1



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Sample Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-162266-1	296157-2018-DW	Water	10/29/18 09:10	10/31/18 10:00
490-162266-2	296158-2018-DW	Water	10/29/18 10:50	10/31/18 10:00
490-162266-3	296159-2018-DW	Water	10/29/18 10:30	10/31/18 10:00
490-162266-4	296160-2018-DW	Water	10/29/18 10:50	10/31/18 10:00



Case Narrative

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Job ID: 490-162266-1

Laboratory: TestAmerica Nashville

Narrative

**Job Narrative
490-162266-1**

Comments

No additional comments.

Receipt

The samples were received on 10/31/2018 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.5° C.

GC Semi VOA

Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 490-555810.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
z	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Client Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296157-2018-DW

Date Collected: 10/29/18 09:10

Lab Sample ID: 490-162266-1

Date Received: 10/31/18 10:00

Matrix: Water

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 11:53	1
Ethane	22.2		5.00	2.70	ug/L			11/08/18 11:53	1
Methane	37800	37.8 mg/L	400	136	ug/L			11/08/18 13:15	80
Propane	ND		5.00	3.30	ug/L			11/08/18 11:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Acetylene (Surr)	83		70 - 130					11/08/18 11:53	1

> 20 mg/L yields explosive conditions
 10-20 mg/L - monitoring advisable
 < 10 mg/L - safe.

Client Sample Results

Client: Reliance Laboratories Inc
 Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296158-2018-DW

Lab Sample ID: 490-162266-2

Date Collected: 10/29/18 10:50

Matrix: Water

Date Received: 10/31/18 10:00

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 12:00	1
Ethane	9.89		5.00	2.70	ug/L			11/08/18 12:00	1
Methane	13900	13.9 mg/L.	200	68.0	ug/L			11/08/18 12:52	40
Propane	ND		5.00	3.30	ug/L			11/08/18 12:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Acetylene (Surr)	87		70 - 130		11/08/18 12:00	1

Client Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296159-2018-DW

Lab Sample ID: 490-162266-3

Date Collected: 10/29/18 10:30

Matrix: Water

Date Received: 10/31/18 10:00

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 12:04	1
Ethane	ND		5.00	2.70	ug/L			11/08/18 12:04	1
Methane	7.90		5.00	1.70	ug/L			11/08/18 12:04	1
Propane	ND		5.00	3.30	ug/L			11/08/18 12:04	1
<i>0.0079 mg/L</i>									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Acetylene (Surr)	86		70 - 130					11/08/18 12:04	1

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Client Sample Results

Client: Reliance Laboratories Inc
 Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296160-2018-DW

Lab Sample ID: 490-162266-4

Date Collected: 10/29/18 10:50

Matrix: Water

Date Received: 10/31/18 10:00

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			11/08/18 12:33	1
Ethane	13.3		5.00	2.70	ug/L			11/08/18 12:33	1
Methane	6510	6.51 mg/L	100	34.0	ug/L			11/08/18 12:58	20
Propane	ND		5.00	3.30	ug/L			11/08/18 12:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Acetylene (Surr)	85		70 - 130					11/08/18 12:33	1

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QC Sample Results

Client: Reliance Laboratories Inc
 Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Method: RSK-175 - Dissolved Gases in Water

Lab Sample ID: MB 490-555810/6							Client Sample ID: Method Blank			
Matrix: Water							Prep Type: Total/NA			
Analysis Batch: 555810										
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Butane	ND		10.0	5.80	ug/L			11/08/18 11:19	1	
Ethane	ND		5.00	2.70	ug/L			11/08/18 11:19	1	
Methane	ND		5.00	1.70	ug/L			11/08/18 11:19	1	
Propane	ND		5.00	3.30	ug/L			11/08/18 11:19	1	
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac	
Acetylene (Surr)	96		70 - 130					11/08/18 11:19	1	

Lab Sample ID: LCS 490-555810/7							Client Sample ID: Lab Control Sample			
Matrix: Water							Prep Type: Total/NA			
Analysis Batch: 555810										
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits			
Butane	1020	907.9		ug/L		89	85 - 115			
Ethane	527	494.1		ug/L		94	85 - 115			
Methane	287	267.5		ug/L		93	85 - 115			
Propane	771	707.3		ug/L		92	85 - 115			
Surrogate	LCS %Recovery	LCS Qualifier	Limits							
Acetylene (Surr)	96		70 - 130							

Lab Sample ID: LCSD 490-555810/8							Client Sample ID: Lab Control Sample Dup			
Matrix: Water							Prep Type: Total/NA			
Analysis Batch: 555810										
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit	
Butane	1020	895.6		ug/L		88	85 - 115	1	30	
Ethane	527	489.1		ug/L		93	85 - 115	1	30	
Methane	287	259.6		ug/L		91	85 - 115	3	30	
Propane	771	691.2		ug/L		90	85 - 115	2	30	
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits							
Acetylene (Surr)	92		70 - 130							

QC Association Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

GC VOA**Analysis Batch: 555810**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-162266-1	296157-2018-DW	Total/NA	Water	RSK-175	
490-162266-1	296157-2018-DW	Total/NA	Water	RSK-175	
490-162266-2	296158-2018-DW	Total/NA	Water	RSK-175	
490-162266-2	296158-2018-DW	Total/NA	Water	RSK-175	
490-162266-3	296159-2018-DW	Total/NA	Water	RSK-175	
490-162266-4	296160-2018-DW	Total/NA	Water	RSK-175	
490-162266-4	296160-2018-DW	Total/NA	Water	RSK-175	
MB 490-555810/6	Method Blank	Total/NA	Water	RSK-175	
LCS 490-555810/7	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 490-555810/8	Lab Control Sample Dup	Total/NA	Water	RSK-175	

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Lab Chronicle

Client: Reliance Laboratories Inc
 Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Client Sample ID: 296157-2018-DW

Lab Sample ID: 490-162266-1

Date Collected: 10/29/18 09:10

Matrix: Water

Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 11:53	AAB	TAL NSH
Total/NA	Analysis	RSK-175		80	21 mL	21 mL	555810	11/08/18 13:15	AAB	TAL NSH

Client Sample ID: 296158-2018-DW

Lab Sample ID: 490-162266-2

Date Collected: 10/29/18 10:50

Matrix: Water

Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 12:00	AAB	TAL NSH
Total/NA	Analysis	RSK-175		40	21 mL	21 mL	555810	11/08/18 12:52	AAB	TAL NSH

Client Sample ID: 296159-2018-DW

Lab Sample ID: 490-162266-3

Date Collected: 10/29/18 10:30

Matrix: Water

Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 12:04	AAB	TAL NSH

Client Sample ID: 296160-2018-DW

Lab Sample ID: 490-162266-4

Date Collected: 10/29/18 10:50

Matrix: Water

Date Received: 10/31/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	555810	11/08/18 12:33	AAB	TAL NSH
Total/NA	Analysis	RSK-175		20	21 mL	21 mL	555810	11/08/18 12:58	AAB	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Method Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases in Water	RSK	TAL NSH

Protocol References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Accreditation/Certification Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 296157, 296158, 296159, 296160

TestAmerica Job ID: 490-162266-1

Laboratory: TestAmerica Nashville

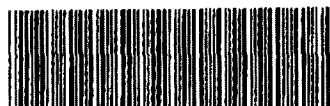
The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
West Virginia DEP	State Program	3	219	02-28-19

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM



490-162266 Chain of Custody

Cooler Received/Opened On 10-31-2018 @ 10:00

Time Samples Removed From Cooler 12:14 Time Samples Placed In Storage 12:23 (2 Hour Window)

1. Tracking # 1451 (last 4 digits, FedEx) Courier: FedEx
IR Gun ID 14740456 pH Strip Lot _____ Chlorine Strip Lot _____

2. Temperature of rep. sample or temp blank when opened: 2.5 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES NO NA

If yes, how many and where: _____

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) AI

7. Were custody seals on containers: YES NO and intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat? used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry Ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES NO NA



14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # 2-8

I certify that I unloaded the cooler and answered questions 7-14 (initial) _____

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) 2-8

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

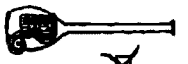
19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) 2-8

I certify that I attached a label with the unique LIMS number to each container (initial) 2-8

21. Were there Non-Conformance issues at login? YES NO Was a NCM generated? YES NO...# _____



RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

2044 MEADOWBROOK ROAD
 POST OFFICE BOX 4657
 BRIDGEPORT, WV 26330
 TEL. (304) 842-5285 • FAX (304) 842-5351
 E-MAIL: relianceclabs@wvdsi.net
 INTERNET: www.RelianceClabs.net

Loc: 490
162266

25 CRIMSON CIRCLE
 MARTINSBURG, WV 25403
 TEL. (304) 596-2084 • FAX (304) 596-2086

West Virginia - Nash

CLIENT NAME Beliance Laboratories

ADDRESS _____

CUSTOMER # _____

SAMPLER (S) D Judy

TEL # _____

FAX # _____

SHEET NO _____ OF _____

PROJECT/REMARKS

LABORATORY #	DATE	TIME	MATRIX W, DW, S, O, M	TEMP 5-4°C Yes No	% OF CONTAIN.	HNO3	H2SO4	HCl	NaOH	BAC-T	NO PRES.	REMARKS
	10/29	9:10	DW		1			IV				290153-2018-DW
		10:50										290158-2018-DW
		10:30										290159-2018-DW
		10:50										290160-2018-DW

Dissolved
 Methane/
 Ethane/
 Butane/
 Propane

SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR HOLDING TIMES
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
 SAMPLES DO DO NOT MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
 SAMPLES ARE ARE NOT FOR REGULATORY COMPLIANCE PURPOSES

REMARKS: Temps / 2.5

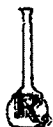
PWS# _____

RECEIVED BY: Beliance Laboratories DATE: 10-30-18 TIME: 1:00
 RECEIVED BY: Fedex DATE: _____ TIME: _____
 RECEIVED BY: Swans DATE: 10/11/18 TIME: 10:00
 RECEIVED BY: Swans DATE: _____ TIME: _____
 RECEIVED BY: Swans DATE: _____ TIME: _____

WEATHER/TEMPERATURE: _____
 RUSH STATUS (INITIAL ACCEPTANCE) _____
EXTENT OF LIABILITY
 SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DETAILED ANALYSIS OF THE SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.
 NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IS NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME. HOWEVER, NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

TO BE COMPLETED BY CLIENT

WHITE - LABORATORY YELLOW - CLIENT



RELIANCE LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV

www.RelianceLabs.net

MARTINSBURG, WV

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 158, 181 |
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00801

Tuesday, October 30, 2018

490-162266

TestAmerica - Nashville
2960 Foster Creighton Drive
Nashville, TN 37204

Please analyze the following sample(s) for: **Dissolved Methane/Ethane/Butane/Propane**

Please identify as:

296157-2018-DW
296158-2018-DW
296159-2018-DW
296160-2018-DW

DATE/TIME SAMPLED: 10/29/2018 9:10
DATE/TIME SAMPLED: 10/29/2018 10:50
DATE/TIME SAMPLED: 10/29/2018 10:30
DATE/TIME SAMPLED: 10/29/2018 10:50

12

Sampled by: D.Judy

PLEASE SEND RESULTS & INVOICE TO:

RELIANCE LABORATORIES, INC.
ATTN: TENLEY MILLER
P.O. BOX 4657
BRIDGEPORT, WV 26330
tmiller@wvdsi.net

Thank You



Amo Oliverio
Biological and Environmental Technology Coordinator\Faculty
Eastern WV Community and Technical College

December 12, 2019

To whom it may concern,

A few months ago, Mr. Judy visited my students at Eastern WV Community and Technical College with an almost unbelievable story. He showed us a video of him igniting flowing tap water on fire, reviewed water analysis reports, and described disease incidences involving the citizens of the Purgitsville area. Impassioned by the story, my students and I began scouring the scientific literature to better understand the health risks associated with some of the contaminants found in the drinking water the families of Purgitsville have unknowingly been drinking.

The flaming water is due to amounts of methane, ethane, and acetylene, which are all extremely flammable natural gases. Exposure to these gases can cause headaches, dizziness, nausea, vomiting, and loss of coordination, and possible suffocation. Many sources stated that these natural gases have not been tested for their ability to cause reproductive harm, which is a possibility and needs further study.

Some of the wells also tested positive for small amounts of arsenic. Arsenic is a heavy metal that can form compounds that may build up in tissues with high fat content until they become toxic. Arsenic increases the risk of cancer, especially in the lung, bladder, skin, kidney, and liver. A study in Chile discovered a higher mortality rate of liver cancer in a population whose drinking water contained small amounts of arsenic. The liver cancer rate was especially high in children.

On top of the list of the most concerning contaminants found were two known cancer-causing forms of the radioactive element, radium (radium 226 and radium 228). Radium is a radioactive element that occurs when uranium naturally decays deep in the Earth. Ingested radium is initially absorbed into the blood. What is not eliminated in the urine accumulates in the kidney, soft tissues, and especially in the bones of humans. As the radium bioaccumulates, or builds up in the body over time, the incidence and mortality risk of cancer greatly increases, especially breast, liver, stomach, and many types of bone cancer.

Just one of these contaminants in drinking water would be a major concern, let alone the combination all of these carcinogenic toxins in a family's drinking water. The medical community have yet to clearly define the health risks of these contaminants, especially when ingesting small amounts in various combinations over long periods of time and should be thoroughly explored in the future. In the meantime, the people of Purgitsville need to have access to clean and healthy drinking water for themselves and their future children.

Sincerely,

A handwritten signature in black ink, appearing to read "Amo Oliverio", written over a light blue horizontal line.

Amo Oliverio

316 Eastern Drive
Moorefield, WV 26836
www.EasternWV.edu

phone: (304) 434-8000
fax: (304) 434-7000
toll free: (877) 982-2322

Work Cited

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my copy

2018 Edition of the Drinking Water Standards and Health Advisories Tables

The 2012 Drinking Water Standards and Health Advisories (DWSHA) Tables were amended March 2018 to fix typographical errors and add health advisories published after 2012.



2018 Edition of the Drinking Water Standards and Health Advisories

EPA 822-F-18-001

**Office of Water
U.S. Environmental Protection Agency
Washington, DC**

March 2018

Recycled/Recyclable Printed
on paper that contains at
least 50% recycled fiber.



Drinking Water Standards and Health Advisories

March 2018

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The Health Advisory (HA) Program, sponsored by the EPA's Office of Water (OW), publishes concentrations of drinking water contaminants at Drinking Water Specific Risk Level Concentration for cancer (10^{-4} Cancer Risk) and concentrations of drinking water contaminants at which noncancer adverse health effects are not anticipated to occur over specific exposure durations - One-day, Ten-day, and Lifetime - in the *Drinking Water Standards and Health Advisories* (DWSHA) tables. The One-day and Ten-day HAs are for a 10 kg child and the Lifetime HA is for a 70 kg adult. The daily drinking water consumption for the 10 kg child and 70 kg adult are assumed to be 1 L/day and 2 L/day, respectively. The Lifetime HA for the drinking water contaminant is calculated from its associated Drinking Water Equivalent Level (DWEL), obtained from its RfD, and incorporates a drinking water Relative Source Contribution (RSC) factor of contaminant-specific data or a default of 20% of total exposure from all sources. Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) for some regulated drinking water contaminants are also published.

HAs serve as the informal technical guidance for unregulated drinking water contaminants to assist Federal, State and local officials, and managers of public or community water systems in protecting public health as needed. They are not to be construed as legally enforceable Federal standards. EPA's OW has provided MCLs, MCLGs, RfDs, One-Day HAs, Ten-day HAs, DWELs, Lifetime HAs, Drinking Water Specific Risk Level Concentration for cancer (10^{-4} Cancer Risk), and Cancer Descriptors in the DWSHA tables. HAs are intended to protect against noncancer effects. The 10^{-4} Cancer Risk level provides information concerning cancer effects. The MCL values for specific drinking water contaminants must be used for regulated contaminants in public drinking water systems.

The DWSHA tables are revised periodically by the OW so that the benchmark values are consistent with the most current Agency assessments. Reference dose (RfD) values are updated to reflect the values in the Integrated Risk Information System (IRIS) and the Office of Pesticide Programs (OPP) Reregistration Eligibility Decisions (REDs) documents. The associated DWEL is recalculated accordingly. The 2018 DWSHA tables **do not** reflect assessments from IRIS or OPP published from 2012 to 2018. The DWSHA tables are currently undergoing a modernization effort to move the relevant HA information into a web-based format. This posting of the 2018 DWSHA tables is an intermediate step to address typographical errors and include health advisories published since the 2012 tables were published.

A Lifetime noncancer benchmark is made available to risk assessment managers for comparison to the cancer risk level drinking water concentration (10^{-4} Cancer Risk) and to determine whether the noncancer Lifetime HA or the cancer risk level drinking water concentration provides a more meaningful scenario-specific risk reduction. In this regard, the Office of Water defines the Lifetime HA as the concentration in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime of exposure, whereas the 10^{-4} Cancer Risk is the concentration of the chemical contaminant in drinking water that is associated with a specific probability of cancer. The Office of Water also advises consideration of the more conservative cancer risk levels (10^{-5} , 10^{-6}), found in the IRIS or OPP RED source documents, if it is considered more appropriate for exposure-specific risk assessment.

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Many of the values on the DWSHA tables have been revised since the original HAs were published. Revised RfDs, 10^{-4} Cancer Risk values, and cancer designations or descriptors obtained from Integrated Risk Information System (IRIS) are presented in **BOLD** type. Revised RfDs, 10^{-4} Cancer Risk values, and cancer designations or descriptors obtained from Office of Pesticide Program's Registration Eligibility Decision (OPP RED) are presented in **BOLD ITALICS** type.

The summaries of IRIS Toxicological Reviews from which the RfDs and cancer benchmarks, as well as the associated narratives and references can be accessed at: <http://www.epa.gov/IRIS>. Those from OPP REDs can be accessed at: <http://www.epa.gov/pesticides/reregistration/status.htm>.

In some cases, there is an HA value for a contaminant but there is no reference to an HA document. Such HA values can be found in the Drinking Water Criteria Document for the contaminant.

With a few exceptions, the RfDs, Health Advisories, and Cancer Risk values have been rounded to one significant figure following the convention adopted by IRIS.

For unregulated chemicals with current IRIS or OPP REDs RfDs, the Lifetime Health Advisories are calculated from the associated DWELs, using the RSC values published in the HA documents for the contaminants.

The DWSHA tables may be reached from the Water Science home page at: <http://www.epa.gov/waterscience/>. The DWSHA tables are accessed under the Drinking Water icon.

Copies of the Tables may be ordered free of charge from

SAFE DRINKING WATER HOTLINE
1-800-426-4791
Monday thru Friday, 9:00 AM to 5:30 PM EST

DEFINITIONS

The following definitions for terms used in the DWSHA tables are not all-encompassing, and should not be construed to be “official” definitions. They are intended to assist the user in understanding terms used in the DWSHA tables.

Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. For example, it is the level of lead or copper which, if exceeded in over 10% of the homes tested, triggers treatment for corrosion control.

Cancer Classification: A descriptive weight-of-evidence judgment as to the likelihood that an agent is a human carcinogen and the conditions under which the carcinogenic effects may be expressed. Under the 2005 EPA *Guidelines for Carcinogen Risk Assessment*, Cancer Descriptors replace the earlier alpha numeric Cancer Group designations (US EPA 1986 guidelines). The Cancer Descriptors in the 2005 EPA *Guidelines for Carcinogen Risk Assessment* are as follows:

- “carcinogenic to humans” (H)
- “likely to be carcinogenic to humans” (L)
- “likely to be carcinogenic above a specified dose but not likely to be carcinogenic below that dose because a key event in tumor formation does not occur below that dose” (L/N)
- “suggestive evidence of carcinogenic potential” (S)
- “inadequate information to assess carcinogenic potential” (I)
- “not likely to be carcinogenic to humans” (N)

The letter abbreviations provided parenthetically above are now used in the DWSHA tables in place of the prior alpha numeric identifiers for chemicals that have been evaluated under the new guidelines (the 2005 guidelines or the 1996 and 1999 draft guidelines) or whose records in the DWSHA tables have been revised.

Cancer Group: A qualitative weight-of-evidence judgment as to the likelihood that a chemical may be a carcinogen for humans. Each chemical was placed into one of the following five categories (US EPA 1986 guidelines). The Cancer Group designations are given in the Tables for chemicals that have not yet been evaluated under the new guidelines or whose records in the DWSHA tables have been revised.

Group Category

- A** Human carcinogen
- B** Probable human carcinogen:
 - B1** indicates limited human evidence
 - B2** indicates sufficient evidence in animals and inadequate or no evidence in humans
- C** Possible human carcinogen
- D** Not classifiable as to human carcinogenicity
- E** Evidence of noncarcinogenicity for humans

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10⁻⁴ Cancer Risk: The concentration of a chemical in drinking water corresponding to an excess estimated lifetime cancer risk of 1 in 10,000.

Drinking Water Advisory: A nonregulatory concentration of a contaminant in water that is likely to be without adverse effects on health and aesthetics for the period it is derived.

DWEL: Drinking Water Equivalent Level. A DWEL is a drinking water lifetime exposure level, assuming **100%** exposure from that medium, at which adverse, noncarcinogenic health effects would not be expected to occur.

HA: Health Advisory. An estimate of acceptable drinking water levels for a chemical substance based on health effects information; an HA is not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, State, and local officials.

One-Day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to one day of exposure. The One-Day HA is intended to protect a 10-kg child consuming 1 liter of water per day.

Ten-Day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to ten days of exposure. The Ten-Day HA is also intended to protect a 10-kg child consuming 1 liter of water per day.

Lifetime HA: The concentration of a chemical in drinking water that is not expected to cause any adverse **noncarcinogenic effects** for a lifetime of exposure, incorporating a drinking water RSC factor of contaminant-specific data or a default of 20% of total exposure from all sources. The Lifetime HA is based on exposure of a 70-kg adult consuming 2 liters of water per day. For Lifetime HAs developed for drinking water contaminants before the Lifetime HA policy change to develop Lifetime HAs for all drinking water contaminants regardless of carcinogenicity status in this DWSHA update, the Lifetime HA for Group C carcinogens, as indicated by the 1986 Cancer Guidelines, includes an uncertainty adjustment factor of 10 for possible carcinogenicity.

MCLG: Maximum Contaminant Level Goal. A non-enforceable health benchmark goal which is set at a level at which no known or anticipated adverse effect on the health of persons is expected to occur and which allows an adequate margin of safety.

MCL: Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG as feasible using the best available analytical and treatment technologies and taking cost into consideration. MCLs are enforceable standards.

Oral cancer slope factor: The slope factor is the result of application of a low-dose extrapolation procedure and is presented as the risk per (mg/kg)/day.

RfD: Reference Dose. An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

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Risk Specific Level Concentration: The concentration of the chemical contaminant in drinking water or air providing cancer risks of 1 in 10,000, 1 in 100,000, or 1 in 1,000,000.

SDWR: Secondary Drinking Water Regulations. Non-enforceable Federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.

TT: Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.

Unit Risk: The unit risk is the quantitative estimate in terms of either risk per $\mu\text{g/L}$ drinking water or risk per $\mu\text{g/m}^3$ air breathed.

ABBREVIATIONS

D	Draft
DWEL	Drinking Water Equivalent Level
DWSHA	Drinking Water Standards and Health Advisories
F	Final
HA	Health Advisory
I	Interim
IRIS	Integrated Risk Information System
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NA	Not Applicable
NOAEL	No-Observed-Adverse-Effect Level
OPP	Office of Pesticide Programs
OW	Office of Water
P	Proposed
Pv	Provisional
RED	Registration Eligibility Decision
Reg	Regulation
RfD	Reference Dose
TT	Treatment Technique

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Chemicals	CASRN Number	Standards			Status HA Document	Health Advisories						Cancer Descriptor
		Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/day)	DWEL (mg/L)	Life-time (mg/L)	mg/L at 10 ⁻⁴ Cancer Risk	
						One-day (mg/L)	Ten-day (mg/L)					
INORGANICS												
Ammonia	7664-41-7	-	-	-	D '92	-	-	-	-	30	-	D
Antimony	7440-36-0	F	0.006	0.006	F '92	0.01	0.01	0.0004	0.01	0.006	-	D
Arsenic	7440-38-2	F	zero	0.01	-	-	-	0.0003	0.01	-	0.002	A
Asbestos (fibers/l >10Fm length)	1332-21-4	F	7 MFL ¹	7 MFL	-	-	-	-	-	-	700-MFL	A ² <i>CANCER</i>
Barium	7440-39-3	F	2	2	D '93	0.7	0.7	0.2	7	-	-	A ²
Beryllium	7440-41-7	F	0.004	0.004	F '92	30	30	0.002	0.07	-	-	N
Boron	7440-42-8	-	-	-	F '08	3	3	0.2	7	6	-	I
Bromate	7789-38-0	F	zero	0.01	D '98	0.2	-	0.004	0.14	-	0.005	B2
Cadmium	7440-43-9	F	0.005	0.005	F '87	0.04	0.04	0.0005	0.02	0.005	-	D
Chloramine ³	10599-90-3	F	4 ⁴	4 ⁴	D '95	-	-	0.1	3.5	3.0	-	-
Chlorine	7782-50-5	F	4 ⁴	4 ⁴	D '95	3	3	0.1	5	4	-	D
Chlorine dioxide	10049-04-4	F	0.8 ⁴	0.8 ⁴	D '98	0.8	0.8	0.03	1	0.8	-	D
Chlorite	7758-19-2	F	0.8	1	D '98	0.8	0.8	0.03	1	0.8	-	D
Chromium (total)	7440-47-3	F	0.1	0.1	F '87	1	1	0.003⁵	0.1	-	-	D
Copper (at tap)	7440-50-8	F	1.3	TT ⁶	D '98	-	-	-	-	-	-	D
Cyanide	143-33-9	F	0.2	0.2	F '87	0.2	0.2	0.0006⁷	-	-	-	I
Fluoride	7681-49-4	F	4	4	-	-	-	0.06⁹	-	-	-	-
Lead (at tap)	7439-92-1	F	zero	TT ⁶	-	-	-	-	-	-	-	-
Manganese	7439-96-5	-	-	-	F '04	1	1	0.14 ¹⁰	1.6	0.3	-	B2 <i>Prob Cancer</i>
Mercury (inorganic)	7487-94-7	F	0.002	0.002	F '87	0.002	0.002	0.0003	0.01	0.002	-	D
Molybdenum	7439-98-7	-	-	-	D '93	0.08	0.08	0.005	0.2	0.04	-	D
Nickel	7440-02-0	F	-	-	F '95	1	1	0.02	0.7	0.1	-	-

¹ MFL = million fibers per liter

² Carcinogenicity based on inhalation exposure

³ Monochloramine, measured as free chlorine.

⁴ 1998 Final Rule for Disinfectants and Disinfection By-products. MRDLG=Maximum Residual Disinfection Level Goal, and MRDL=Maximum Residual Disinfection Level

⁵ IRIS value for chromium VI

⁶ Copper action level 1.3 mg/L, lead action level 0.015 mg/L.

⁷ This RfD is for hydrogen cyanide

⁸ In case of overfeed of the fluoridation chemical see CDC Guidelines in Engineering and Administrative Recommendations on Water Fluoridation www.cdc.gov/mmwr/preview/mmwrhtml/00039178.htm. Elevated F levels ≥ 10mg/L require action by the water system operator

⁹ Based on dental fluorosis in children, a cosmetic effect. MCLG based on skeletal fluorosis

¹⁰ Dietary manganese. The lifetime health advisory includes a 3 fold modifying factor to account for increased bioavailability from drinking water.

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Chemicals	CASRN Number	Standards			Status HA Document	Health Advisories						Cancer Descriptor
		Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RFD (mg/kg/day)	DWEL (mg/L)	Life-time (mg/L)	mg/L at 10 ⁻⁴ Cancer Risk	
						One-day (mg/L)	Ten-day (mg/L)					
Nitrate (as N)	14797-55-8	F	10	10	D '93	10 ¹	10 ¹	1.6	-	-	-	-
Nitrite (as N)	14797-65-0	F	1	1	D '93	1 ¹	1 ¹	0.16	-	-	-	-
Nitrate + Nitrite (both as N)		F	10	10	D '93	-	-	-	-	-	-	-
Perchlorate ²	14797-73-0	-	-	-	I '08	-	-	0.007	0.025	0.015	-	L/N
Selenium	7782-49-2	F	0.05	0.05	-	-	-	0.005	0.2	0.05	-	D
Silver	7440-22-4	-	-	-	F '92	0.2	0.2	0.005 ³	0.2	0.1 ³	-	D
Strontium	7440-24-6	-	-	-	D '93	25	25	0.6	20	4	-	D
Thallium	7440-28-0	F	0.0005	0.002	F '92	0.007	0.007	-	-	-	-	I
White phosphorous	7723-14-0	-	-	-	F '90	-	-	0.00002	0.0005	0.0001	-	D
Zinc	7440-66-6	-	-	-	D '93	6	6	0.3	10	2	-	I
RADIONUCLIDES												
Beta particle and photon activity (formerly man-made radionuclides)		F	zero	4 mrem/yr	-	-	-	-	-	-	4 mrem/yr	A
Gross alpha particle activity		F	zero	15 pCi/L	-	-	-	-	-	-	15 pCi/L	A
Combined Radium 226 & 228	7440-14-4	F	zero	5 pCi/L	-	-	-	-	-	-	-	A
Radon	10043-92-2	P	zero	300 pCi/L AMCL ⁴ 4000 pCi/L	-	-	-	-	-	-	150 pCi/L	A
Uranium	7440-61-1	F	zero	0.03	-	-	-	0.0006 ⁵	0.02	-	-	A

Cancer

¹ These values are calculated for a 4-kg infant and are protective for all age groups
² Subchronic value for pregnant women
³ Based on a cosmetic effect
⁴ AMCL = Alternative Maximum Contaminant Level
⁵ Soluble uranium salts Radionuclide Rule

226-228 - ZERO Limit
 A - GROUP Cancer
 F - STATUS - FINAL

Drinking Water Standards and Health Advisories

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Secondary Drinking Water Regulations

Chemicals	CAS Number	Status	SDWR
Aluminum	7429-90-5	F	0.05 to 0.2 mg/L
Chloride	7647-14-5	F	250 mg/L
Color	NA	F	15 color units
Copper	7440-50-8	F	1.0 mg/L
Corrosivity	NA	F	non-corrosive
Fluoride	7681-49-4	F	2.0 mg/L
Foaming agents	NA	F	0.5 mg/L
Iron	7439-89-6	F	0.3 mg/L
Manganese	7439-96-5	F	0.05 mg/L
Odor	NA	F	3 threshold odor numbers
pH	NA	F	6.5 – 8.5
Silver	7440-22-4	F	0.1 mg/L
Sulfate	7757-82-6	F	250 mg/L
Total dissolved solids (TDS)	NA	F	500 mg/L
Zinc	7440-66-6	F	5 mg/L