

GW – 028

**Background
Groundwater
Investigation Report**

PART 9 OF 9

September 2015



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.00297	J	0.000330	0.0100	1	06/08/2015 16:50	WG793580
Vanadium	0.00584		0.000180	0.00500	1	06/05/2015 11:24	WG793649
Vanadium,Dissolved	0.00571		0.000180	0.00500	1	06/08/2015 16:50	WG793580
Zinc,Dissolved	U		0.00260	0.0250	1	06/08/2015 16:50	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 17:11	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.7			62.0-128		06/11/2015 17:11	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/09/2015 23:13	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/09/2015 23:13	WG793664
Chloroform	U		0.000320	0.00500	1	06/09/2015 23:13	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/09/2015 23:13	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/09/2015 23:13	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/09/2015 23:13	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/09/2015 23:13	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/09/2015 23:13	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/09/2015 23:13	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/09/2015 23:13	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/09/2015 23:13	WG793664
Toluene	U		0.000780	0.00500	1	06/09/2015 23:13	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/09/2015 23:13	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/09/2015 23:13	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/09/2015 23:13	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/09/2015 23:13	WG793664
o-Xylene	U		0.000340	0.00100	1	06/09/2015 23:13	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/09/2015 23:13	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/09/2015 23:13	WG793664
(S) Toluene-d8	110			90.0-115		06/09/2015 23:13	WG793664
(S) Dibromofluoromethane	114			79.0-121		06/09/2015 23:13	WG793664
(S) 4-Bromofluorobenzene	100			80.1-120		06/09/2015 23:13	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0330	J	0.0220	0.100	1	06/06/2015 18:29	WG793561
C28-C40 Oil Range	0.0280	J	0.0120	0.100	1	06/06/2015 18:29	WG793561
(S) o-Terphenyl	111			50.0-150		06/06/2015 18:29	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 17:53	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 17:53	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 17:53	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 17:53	WG794004
(S) 2-Fluorophenol	49.2			10.0-77.9		06/08/2015 17:53	WG794004
(S) Phenol-d5	33.5			5.00-70.1		06/08/2015 17:53	WG794004
(S) Nitrobenzene-d5	63.0			21.8-123		06/08/2015 17:53	WG794004



Collected date/time: 06/02/15 10:30

L768982

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	71.3			29.5-131		06/08/2015 17:53	WG794004
(S) 2,4,6-Tribromophenol	74.4			11.2-130		06/08/2015 17:53	WG794004
(S) p-Terphenyl-d14	69.3			29.3-137		06/08/2015 17:53	WG794004

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	6510		2.80	10.0	1	06/06/2015 14:05	WG793713

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 353.2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.877		0.0200	0.100	1	06/11/2015 04:13	WG794537

Wet Chemistry by Method 9012B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:25	WG793865

Wet Chemistry by Method 9056MOD

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	978		5.20	100	100	06/10/2015 21:39	WG794586
Fluoride	19.6		0.990	10.0	100	06/10/2015 21:39	WG794586
Sulfate	3270		7.70	500	100	06/10/2015 21:39	WG794586

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	U		0.0000490	0.000200	1	06/05/2015 20:51	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum,Dissolved	U		0.0100	0.500	5	06/08/2015 16:53	WG793580
Arsenic	0.00363		0.000250	0.00200	1	06/05/2015 11:27	WG793649
Arsenic,Dissolved	0.00286	J	0.00120	0.0100	5	06/08/2015 16:53	WG793580
Barium	0.00882		0.000360	0.00500	1	06/05/2015 11:27	WG793649
Barium,Dissolved	0.00694	J	0.00180	0.0250	5	06/08/2015 16:53	WG793580
Boron,Dissolved	1.81		0.00750	0.100	5	06/08/2015 16:53	WG793580
Cadmium,Dissolved	U		0.000800	0.00500	5	06/08/2015 16:53	WG793580
Calcium,Dissolved	563		0.230	5.00	5	06/08/2015 16:53	WG793580
Chromium	0.000661	J	0.000540	0.00200	1	06/05/2015 11:27	WG793649
Chromium,Dissolved	U		0.00270	0.0100	5	06/08/2015 16:53	WG793580
Copper,Dissolved	U		0.00260	0.0250	5	06/08/2015 16:53	WG793580
Cobalt,Dissolved	U		0.00130	0.0100	5	06/08/2015 16:53	WG793580
Iron	0.0481	J	0.0150	0.100	1	06/05/2015 11:27	WG793649
Iron,Dissolved	U		0.0750	0.500	5	06/08/2015 16:53	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 11:27	WG793649
Lead,Dissolved	U		0.00120	0.0100	5	06/08/2015 16:53	WG793580
Manganese	0.000536	J	0.000250	0.00500	1	06/05/2015 11:27	WG793649
Manganese,Dissolved	U		0.00120	0.0250	5	06/08/2015 16:53	WG793580
Molybdenum,Dissolved	0.0253		0.000700	0.0250	5	06/08/2015 16:53	WG793580
Nickel	0.00219		0.000350	0.00200	1	06/05/2015 11:27	WG793649
Nickel,Dissolved	0.00589	J	0.00180	0.0100	5	06/08/2015 16:53	WG793580
Potassium,Dissolved	U		0.180	5.00	5	06/08/2015 16:53	WG793580
Selenium	0.00915		0.000380	0.00200	1	06/05/2015 11:27	WG793649
Selenium,Dissolved	0.00869	J	0.00190	0.0100	5	06/08/2015 16:53	WG793580
Silver,Dissolved	U		0.00160	0.0100	5	06/08/2015 16:53	WG793580
Sodium,Dissolved	259		0.550	5.00	5	06/08/2015 16:53	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.218		0.00160	0.0500	5	06/08/2015 16:53	WG793580
Vanadium	0.0192		0.000180	0.00500	1	06/05/2015 11:27	WG793649
Vanadium,Dissolved	0.0188	J	0.000900	0.0250	5	06/08/2015 16:53	WG793580
Zinc,Dissolved	U		0.0130	0.125	5	06/08/2015 16:53	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 17:34	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.6			62.0-128		06/11/2015 17:34	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/09/2015 23:36	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/09/2015 23:36	WG793664
Chloroform	U		0.000320	0.00500	1	06/09/2015 23:36	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/09/2015 23:36	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/09/2015 23:36	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/09/2015 23:36	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/09/2015 23:36	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/09/2015 23:36	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/09/2015 23:36	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/09/2015 23:36	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/09/2015 23:36	WG793664
Toluene	U		0.000780	0.00500	1	06/09/2015 23:36	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/09/2015 23:36	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/09/2015 23:36	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/09/2015 23:36	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/09/2015 23:36	WG793664
o-Xylene	U		0.000340	0.00100	1	06/09/2015 23:36	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/09/2015 23:36	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/09/2015 23:36	WG793664
(S) Toluene-d8	111			90.0-115		06/09/2015 23:36	WG793664
(S) Dibromofluoromethane	111			79.0-121		06/09/2015 23:36	WG793664
(S) 4-Bromofluorobenzene	96.8			80.1-120		06/09/2015 23:36	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		0.0220	0.100	1	06/06/2015 18:47	WG793561
C28-C40 Oil Range	0.0210	J	0.0120	0.100	1	06/06/2015 18:47	WG793561
(S) o-Terphenyl	106			50.0-150		06/06/2015 18:47	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 18:17	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 18:17	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 18:17	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 18:17	WG794004
(S) 2-Fluorophenol	52.0			10.0-77.9		06/08/2015 18:17	WG794004
(S) Phenol-d5	35.0			5.00-70.1		06/08/2015 18:17	WG794004
(S) Nitrobenzene-d5	68.2			21.8-123		06/08/2015 18:17	WG794004

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	74.5			29.5-131		06/08/2015 18:17	WG794004
(S) 2,4,6-Tribromophenol	80.7			11.2-130		06/08/2015 18:17	WG794004
(S) p-Terphenyl-d14	68.5			29.3-137		06/08/2015 18:17	WG794004

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	5180		2.80	10.0	1	06/06/2015 14:05	WG793713

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	5.31		0.0200	0.100	1	06/11/2015 04:14	WG794537

6 Qc

7 Gl

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:26	WG793865

8 Al

9 Sc

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	857		5.20	100	100	06/10/2015 21:54	WG794586
Fluoride	20.1		0.990	10.0	100	06/10/2015 21:54	WG794586
Sulfate	2180		7.70	500	100	06/10/2015 21:54	WG794586

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 20:54	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.0100	0.500	5	06/08/2015 17:04	WG793580
Arsenic	0.00277		0.000250	0.00200	1	06/05/2015 11:29	WG793649
Arsenic,Dissolved	0.00181	J	0.00120	0.0100	5	06/08/2015 17:04	WG793580
Barium	0.0214		0.000360	0.00500	1	06/05/2015 11:29	WG793649
Barium,Dissolved	0.00864	J	0.00180	0.0250	5	06/08/2015 17:04	WG793580
Boron,Dissolved	0.613		0.00750	0.100	5	06/08/2015 17:04	WG793580
Cadmium,Dissolved	U		0.000800	0.00500	5	06/08/2015 17:04	WG793580
Calcium,Dissolved	742		0.230	5.00	5	06/08/2015 17:04	WG793580
Chromium	0.00109	J	0.000540	0.00200	1	06/05/2015 11:29	WG793649
Chromium,Dissolved	U		0.00270	0.0100	5	06/08/2015 17:04	WG793580
Copper,Dissolved	U		0.00260	0.0250	5	06/08/2015 17:04	WG793580
Cobalt,Dissolved	U		0.00130	0.0100	5	06/08/2015 17:04	WG793580
Iron	0.291		0.0150	0.100	1	06/05/2015 11:29	WG793649
Iron,Dissolved	U		0.0750	0.500	5	06/08/2015 17:04	WG793580
Lead	0.000384	J	0.000240	0.00200	1	06/05/2015 11:29	WG793649
Lead,Dissolved	U		0.00120	0.0100	5	06/08/2015 17:04	WG793580
Manganese	0.0179		0.000250	0.00500	1	06/05/2015 11:29	WG793649
Manganese,Dissolved	U		0.00120	0.0250	5	06/08/2015 17:04	WG793580
Molybdenum,Dissolved	U		0.000700	0.0250	5	06/08/2015 17:04	WG793580
Nickel	0.00198	J	0.000350	0.00200	1	06/05/2015 11:29	WG793649
Nickel,Dissolved	0.0177		0.00180	0.0100	5	06/08/2015 17:04	WG793580
Potassium,Dissolved	2.21	J	0.180	5.00	5	06/08/2015 17:04	WG793580
Selenium	0.00485		0.000380	0.00200	1	06/05/2015 11:29	WG793649
Selenium,Dissolved	0.00414	J	0.00190	0.0100	5	06/08/2015 17:04	WG793580
Silver,Dissolved	U		0.00160	0.0100	5	06/08/2015 17:04	WG793580
Sodium,Dissolved	135		0.550	5.00	5	06/08/2015 17:04	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.0776		0.00160	0.0500	5	06/08/2015 17:04	WG793580
Vanadium	0.0171		0.000180	0.00500	1	06/05/2015 11:29	WG793649
Vanadium,Dissolved	0.0168	J	0.000900	0.0250	5	06/08/2015 17:04	WG793580
Zinc,Dissolved	U		0.0130	0.125	5	06/08/2015 17:04	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 17:56	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.2			62.0-128		06/11/2015 17:56	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/09/2015 23:59	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/09/2015 23:59	WG793664
Chloroform	U		0.000320	0.00500	1	06/09/2015 23:59	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/09/2015 23:59	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/09/2015 23:59	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/09/2015 23:59	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/09/2015 23:59	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/09/2015 23:59	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/09/2015 23:59	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/09/2015 23:59	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/09/2015 23:59	WG793664
Toluene	U		0.000780	0.00500	1	06/09/2015 23:59	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/09/2015 23:59	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/09/2015 23:59	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/09/2015 23:59	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/09/2015 23:59	WG793664
o-Xylene	U		0.000340	0.00100	1	06/09/2015 23:59	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/09/2015 23:59	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/09/2015 23:59	WG793664
(S) Toluene-d8	110			90.0-115		06/09/2015 23:59	WG793664
(S) Dibromofluoromethane	115			79.0-121		06/09/2015 23:59	WG793664
(S) 4-Bromofluorobenzene	98.1			80.1-120		06/09/2015 23:59	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0360	J	0.0220	0.100	1	06/06/2015 19:05	WG793561
C28-C40 Oil Range	0.0230	J	0.0120	0.100	1	06/06/2015 19:05	WG793561
(S) o-Terphenyl	105			50.0-150		06/06/2015 19:05	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 18:40	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 18:40	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 18:40	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 18:40	WG794004
(S) 2-Fluorophenol	52.8			10.0-77.9		06/08/2015 18:40	WG794004
(S) Phenol-d5	35.0			5.00-70.1		06/08/2015 18:40	WG794004
(S) Nitrobenzene-d5	66.8			21.8-123		06/08/2015 18:40	WG794004

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	73.2			29.5-131		06/08/2015 18:40	WG794004
(S) 2,4,6-Tribromophenol	82.1			11.2-130		06/08/2015 18:40	WG794004
(S) p-Terphenyl-d14	78.6			29.3-137		06/08/2015 18:40	WG794004

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	5130		2.80	10.0	1	06/06/2015 14:05	WG793713

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	8.78		0.0200	0.100	1	06/11/2015 04:24	WG794537

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:27	WG793865

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	790		5.20	100	100	06/10/2015 22:10	WG794586
Fluoride	18.2		0.990	10.0	100	06/10/2015 22:10	WG794586
Sulfate	2320		7.70	500	100	06/10/2015 22:10	WG794586

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 20:57	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.0100	0.500	5	06/08/2015 17:06	WG793580
Arsenic	0.00512		0.000250	0.00200	1	06/05/2015 11:32	WG793649
Arsenic,Dissolved	0.00391	J	0.00120	0.0100	5	06/08/2015 17:06	WG793580
Barium	0.00944		0.000360	0.00500	1	06/05/2015 11:32	WG793649
Barium,Dissolved	0.00608	J	0.00180	0.0250	5	06/08/2015 17:06	WG793580
Boron,Dissolved	1.17		0.00750	0.100	5	06/08/2015 17:06	WG793580
Cadmium,Dissolved	U		0.000800	0.00500	5	06/08/2015 17:06	WG793580
Calcium,Dissolved	615		0.230	5.00	5	06/08/2015 17:06	WG793580
Chromium	0.00104	J	0.000540	0.00200	1	06/05/2015 11:32	WG793649
Chromium,Dissolved	U		0.00270	0.0100	5	06/08/2015 17:06	WG793580
Copper,Dissolved	U		0.00260	0.0250	5	06/08/2015 17:06	WG793580
Cobalt,Dissolved	U		0.00130	0.0100	5	06/08/2015 17:06	WG793580
Iron	U		0.0150	0.100	1	06/05/2015 11:32	WG793649
Iron,Dissolved	U		0.0750	0.500	5	06/08/2015 17:06	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 11:32	WG793649
Lead,Dissolved	U		0.00120	0.0100	5	06/08/2015 17:06	WG793580
Manganese	0.0367		0.000250	0.00500	1	06/05/2015 11:32	WG793649
Manganese,Dissolved	0.00415	J	0.00120	0.0250	5	06/08/2015 17:06	WG793580
Molybdenum,Dissolved	0.0158	J	0.000700	0.0250	5	06/08/2015 17:06	WG793580
Nickel	0.00358		0.000350	0.00200	1	06/05/2015 11:32	WG793649
Nickel,Dissolved	0.0232		0.00180	0.0100	5	06/08/2015 17:06	WG793580
Potassium,Dissolved	0.314	J	0.180	5.00	5	06/08/2015 17:06	WG793580
Selenium	0.0171		0.000380	0.00200	1	06/05/2015 11:32	WG793649
Selenium,Dissolved	0.0170		0.00190	0.0100	5	06/08/2015 17:06	WG793580
Silver,Dissolved	U		0.00160	0.0100	5	06/08/2015 17:06	WG793580
Sodium,Dissolved	206		0.550	5.00	5	06/08/2015 17:06	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.0395	U	0.00160	0.0500	5	06/08/2015 17:06	WG793580
Vanadium	0.0160		0.000180	0.00500	1	06/05/2015 11:32	WG793649
Vanadium,Dissolved	0.0155	U	0.000900	0.0250	5	06/08/2015 17:06	WG793580
Zinc,Dissolved	U		0.0130	0.125	5	06/08/2015 17:06	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 18:18	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.6			62.0-128		06/11/2015 18:18	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 00:22	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 00:22	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 00:22	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 00:22	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 00:22	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 00:22	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 00:22	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 00:22	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 00:22	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 00:22	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 00:22	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 00:22	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 00:22	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 00:22	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 00:22	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 00:22	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 00:22	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 00:22	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 00:22	WG793664
(S) Toluene-d8	110			90.0-115		06/10/2015 00:22	WG793664
(S) Dibromofluoromethane	114			79.0-121		06/10/2015 00:22	WG793664
(S) 4-Bromofluorobenzene	98.9			80.1-120		06/10/2015 00:22	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.320		0.0220	0.100	1	06/06/2015 19:23	WG793561
C28-C40 Oil Range	0.150		0.0120	0.100	1	06/06/2015 19:23	WG793561
(S) o-Terphenyl	107			50.0-150		06/06/2015 19:23	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 19:03	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 19:03	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 19:03	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 19:03	WG794004
(S) 2-Fluorophenol	40.4			10.0-77.9		06/08/2015 19:03	WG794004
(S) Phenol-d5	28.8			5.00-70.1		06/08/2015 19:03	WG794004
(S) Nitrobenzene-d5	68.6			21.8-123		06/08/2015 19:03	WG794004

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	67.6			29.5-131		06/08/2015 19:03	WG794004
(S) 2,4,6-Tribromophenol	75.4			11.2-130		06/08/2015 19:03	WG794004
(S) p-Terphenyl-d14	77.6			29.3-137		06/08/2015 19:03	WG794004

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	4700		2.80	10.0	1	06/06/2015 14:05	WG793713

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	0.377		0.0200	0.100	1	06/11/2015 04:25	WG794537

6 Qc

7 Gl

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:28	WG793865

8 Al

9 Sc

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	704		5.20	100	100	06/10/2015 22:25	WG794586
Fluoride	20.2		0.990	10.0	100	06/10/2015 22:25	WG794586
Sulfate	2170		7.70	500	100	06/10/2015 22:25	WG794586

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 21:00	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.0100	0.500	5	06/08/2015 17:09	WG793580
Arsenic	0.00108	J	0.000250	0.00200	1	06/05/2015 11:35	WG793649
Arsenic,Dissolved	U		0.00120	0.0100	5	06/08/2015 17:09	WG793580
Barium	0.0253		0.000360	0.00500	1	06/05/2015 11:35	WG793649
Barium,Dissolved	0.0216	J	0.00180	0.0250	5	06/08/2015 17:09	WG793580
Boron,Dissolved	1.15		0.00750	0.100	5	06/08/2015 17:09	WG793580
Cadmium,Dissolved	U		0.000800	0.00500	5	06/08/2015 17:09	WG793580
Calcium,Dissolved	599		0.230	5.00	5	06/08/2015 17:09	WG793580
Chromium	0.000868	J	0.000540	0.00200	1	06/05/2015 11:35	WG793649
Chromium,Dissolved	U		0.00270	0.0100	5	06/08/2015 17:09	WG793580
Copper,Dissolved	U		0.00260	0.0250	5	06/08/2015 17:09	WG793580
Cobalt,Dissolved	U		0.00130	0.0100	5	06/08/2015 17:09	WG793580
Iron	0.259		0.0150	0.100	1	06/05/2015 11:35	WG793649
Iron,Dissolved	U		0.0750	0.500	5	06/08/2015 17:09	WG793580
Lead	0.000346	J	0.000240	0.00200	1	06/05/2015 11:35	WG793649
Lead,Dissolved	U		0.00120	0.0100	5	06/08/2015 17:09	WG793580
Manganese	0.0139		0.000250	0.00500	1	06/05/2015 11:35	WG793649
Manganese,Dissolved	U		0.00120	0.0250	5	06/08/2015 17:09	WG793580
Molybdenum,Dissolved	U		0.000700	0.0250	5	06/08/2015 17:09	WG793580
Nickel	0.00238		0.000350	0.00200	1	06/05/2015 11:35	WG793649
Nickel,Dissolved	0.0143		0.00180	0.0100	5	06/08/2015 17:09	WG793580
Potassium,Dissolved	1.96	J	0.180	5.00	5	06/08/2015 17:09	WG793580
Selenium	0.00552		0.000380	0.00200	1	06/05/2015 11:35	WG793649
Selenium,Dissolved	0.00438	J	0.00190	0.0100	5	06/08/2015 17:09	WG793580
Silver,Dissolved	U		0.00160	0.0100	5	06/08/2015 17:09	WG793580
Sodium,Dissolved	264		0.550	5.00	5	06/08/2015 17:09	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.0348	└	0.00160	0.0500	5	06/08/2015 17:09	WG793580
Vanadium	0.00616		0.000180	0.00500	1	06/05/2015 11:35	WG793649
Vanadium,Dissolved	0.00485	└	0.000900	0.0250	5	06/08/2015 17:09	WG793580
Zinc,Dissolved	U		0.0130	0.125	5	06/08/2015 17:09	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 18:40	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.3			62.0-128		06/11/2015 18:40	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 00:45	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 00:45	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 00:45	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 00:45	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 00:45	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 00:45	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 00:45	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 00:45	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 00:45	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 00:45	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 00:45	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 00:45	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 00:45	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 00:45	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 00:45	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 00:45	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 00:45	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 00:45	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 00:45	WG793664
(S) Toluene-d8	110			90.0-115		06/10/2015 00:45	WG793664
(S) Dibromofluoromethane	111			79.0-121		06/10/2015 00:45	WG793664
(S) 4-Bromofluorobenzene	95.7			80.1-120		06/10/2015 00:45	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0450	└	0.0220	0.100	1	06/06/2015 19:41	WG793561
C28-C40 Oil Range	0.0390	└	0.0120	0.100	1	06/06/2015 19:41	WG793561
(S) o-Terphenyl	107			50.0-150		06/06/2015 19:41	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 19:26	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 19:26	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 19:26	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 19:26	WG794004
(S) 2-Fluorophenol	56.5			10.0-77.9		06/08/2015 19:26	WG794004
(S) Phenol-d5	35.4			5.00-70.1		06/08/2015 19:26	WG794004
(S) Nitrobenzene-d5	74.6			21.8-123		06/08/2015 19:26	WG794004



Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	79.4			29.5-131		06/08/2015 19:26	WG794004
(S) 2,4,6-Tribromophenol	83.6			11.2-130		06/08/2015 19:26	WG794004
(S) p-Terphenyl-d14	74.2			29.3-137		06/08/2015 19:26	WG794004

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	5420		2.80	10.0	1	06/06/2015 14:06	WG793713

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	0.874		0.0200	0.100	1	06/11/2015 04:26	WG794537

6 Qc

7 Gl

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	0.00220	J	0.00180	0.00500	1	06/10/2015 15:29	WG793865

8 Al

9 Sc

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	1530		5.20	100	100	06/10/2015 22:40	WG794586
Fluoride	17.1		0.990	10.0	100	06/10/2015 22:40	WG794586
Sulfate	1290		7.70	500	100	06/10/2015 22:40	WG794586

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 21:03	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.0100	0.500	5	06/08/2015 17:11	WG793580
Arsenic	0.00163	J	0.000250	0.00200	1	06/05/2015 11:37	WG793649
Arsenic,Dissolved	U		0.00120	0.0100	5	06/08/2015 17:11	WG793580
Barium	0.0272		0.000360	0.00500	1	06/05/2015 11:37	WG793649
Barium,Dissolved	0.0290		0.00180	0.0250	5	06/08/2015 17:11	WG793580
Boron,Dissolved	0.557		0.00750	0.100	5	06/08/2015 17:11	WG793580
Cadmium,Dissolved	U		0.000800	0.00500	5	06/08/2015 17:11	WG793580
Calcium,Dissolved	490		0.230	5.00	5	06/08/2015 17:11	WG793580
Chromium	U		0.000540	0.00200	1	06/05/2015 11:37	WG793649
Chromium,Dissolved	U		0.00270	0.0100	5	06/08/2015 17:11	WG793580
Copper,Dissolved	U		0.00260	0.0250	5	06/08/2015 17:11	WG793580
Cobalt,Dissolved	U		0.00130	0.0100	5	06/08/2015 17:11	WG793580
Iron	0.0654	J	0.0150	0.100	1	06/05/2015 11:37	WG793649
Iron,Dissolved	U		0.0750	0.500	5	06/08/2015 17:11	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 11:37	WG793649
Lead,Dissolved	U		0.00120	0.0100	5	06/08/2015 17:11	WG793580
Manganese	0.205		0.000250	0.00500	1	06/05/2015 11:37	WG793649
Manganese,Dissolved	0.181		0.00120	0.0250	5	06/08/2015 17:11	WG793580
Molybdenum,Dissolved	U		0.000700	0.0250	5	06/08/2015 17:11	WG793580
Nickel	0.00360		0.000350	0.00200	1	06/05/2015 11:37	WG793649
Nickel,Dissolved	0.0353		0.00180	0.0100	5	06/08/2015 17:11	WG793580
Potassium,Dissolved	4.12	J	0.180	5.00	5	06/08/2015 17:11	WG793580
Selenium	0.00293		0.000380	0.00200	1	06/05/2015 11:37	WG793649
Selenium,Dissolved	U		0.00190	0.0100	5	06/08/2015 17:11	WG793580
Silver,Dissolved	U		0.00160	0.0100	5	06/08/2015 17:11	WG793580
Sodium,Dissolved	972		0.550	5.00	5	06/08/2015 17:11	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.00578	U	0.00160	0.0500	5	06/08/2015 17:11	WG793580
Vanadium	0.00340	U	0.000180	0.00500	1	06/05/2015 11:37	WG793649
Vanadium,Dissolved	0.00290	U	0.000900	0.0250	5	06/08/2015 17:11	WG793580
Zinc,Dissolved	U		0.0130	0.125	5	06/08/2015 17:11	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 19:02	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.4			62.0-128		06/11/2015 19:02	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 01:08	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 01:08	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 01:08	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 01:08	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 01:08	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 01:08	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 01:08	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 01:08	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 01:08	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 01:08	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 01:08	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 01:08	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 01:08	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 01:08	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 01:08	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 01:08	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 01:08	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 01:08	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 01:08	WG793664
(S) Toluene-d8	108			90.0-115		06/10/2015 01:08	WG793664
(S) Dibromofluoromethane	113			79.0-121		06/10/2015 01:08	WG793664
(S) 4-Bromofluorobenzene	98.4			80.1-120		06/10/2015 01:08	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0540	U	0.0220	0.100	1	06/06/2015 19:59	WG793561
C28-C40 Oil Range	0.0340	U	0.0120	0.100	1	06/06/2015 19:59	WG793561
(S) o-Terphenyl	107			50.0-150		06/06/2015 19:59	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 19:50	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 19:50	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 19:50	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 19:50	WG794004
(S) 2-Fluorophenol	50.4			10.0-77.9		06/08/2015 19:50	WG794004
(S) Phenol-d5	34.3			5.00-70.1		06/08/2015 19:50	WG794004
(S) Nitrobenzene-d5	71.2			21.8-123		06/08/2015 19:50	WG794004



Collected date/time: 06/02/15 00:00

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Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	76.7			29.5-131		06/08/2015 19:50	WG794004
(S) 2,4,6-Tribromophenol	86.4			11.2-130		06/08/2015 19:50	WG794004
(S) p-Terphenyl-d14	77.8			29.3-137		06/08/2015 19:50	WG794004

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	10.0	J	2.80	10.0	1	06/09/2015 16:57	WG793849

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	0.0689	J	0.0200	0.100	1	06/11/2015 04:28	WG794537

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:30	WG793865

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	6.07		0.0520	1.00	1	06/10/2015 17:47	WG794586
Fluoride	0.0848	J	0.00990	0.100	1	06/10/2015 17:47	WG794586
Sulfate	0.153	+J	0.0770	5.00	1	06/10/2015 17:47	WG794586

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 21:06	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.00200	0.100	1	06/08/2015 17:14	WG793580
Arsenic	U		0.000250	0.00200	1	06/05/2015 11:40	WG793649
Arsenic,Dissolved	U		0.000250	0.00200	1	06/08/2015 17:14	WG793580
Barium	0.00176	J	0.000360	0.00500	1	06/05/2015 11:40	WG793649
Barium,Dissolved	0.000987	J	0.000360	0.00500	1	06/08/2015 17:14	WG793580
Boron,Dissolved	0.0311		0.00150	0.0200	1	06/08/2015 17:14	WG793580
Cadmium,Dissolved	U		0.000160	0.00100	1	06/08/2015 17:14	WG793580
Calcium,Dissolved	U		0.0460	1.00	1	06/08/2015 17:14	WG793580
Chromium	U		0.000540	0.00200	1	06/05/2015 11:40	WG793649
Chromium,Dissolved	U		0.000540	0.00200	1	06/08/2015 17:14	WG793580
Copper,Dissolved	U		0.000520	0.00500	1	06/08/2015 17:14	WG793580
Cobalt,Dissolved	U		0.000260	0.00200	1	06/08/2015 17:14	WG793580
Iron	U		0.0150	0.100	1	06/05/2015 11:40	WG793649
Iron,Dissolved	U		0.0150	0.100	1	06/08/2015 17:14	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 11:40	WG793649
Lead,Dissolved	U		0.000240	0.00200	1	06/08/2015 17:14	WG793580
Manganese	U		0.000250	0.00500	1	06/05/2015 11:40	WG793649
Manganese,Dissolved	U		0.000250	0.00500	1	06/08/2015 17:14	WG793580
Molybdenum,Dissolved	U		0.000140	0.00500	1	06/08/2015 17:14	WG793580
Nickel	0.00291		0.000350	0.00200	1	06/05/2015 11:40	WG793649
Nickel,Dissolved	U		0.000350	0.00200	1	06/08/2015 17:14	WG793580
Potassium,Dissolved	U		0.0370	1.00	1	06/08/2015 17:14	WG793580
Selenium	U		0.000380	0.00200	1	06/05/2015 11:40	WG793649
Selenium,Dissolved	U		0.000380	0.00200	1	06/08/2015 17:14	WG793580
Silver,Dissolved	U		0.000310	0.00200	1	06/08/2015 17:14	WG793580
Sodium,Dissolved	0.132	J	0.110	1.00	1	06/08/2015 17:14	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	U		0.000330	0.0100	1	06/08/2015 17:14	WG793580
Vanadium	0.000451	J	0.000180	0.00500	1	06/05/2015 11:40	WG793649
Vanadium,Dissolved	0.000346	J	0.000180	0.00500	1	06/08/2015 17:14	WG793580
Zinc,Dissolved	U		0.00260	0.0250	1	06/08/2015 17:14	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 22:10	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.5			62.0-128		06/11/2015 22:10	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 01:31	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 01:31	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 01:31	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 01:31	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 01:31	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 01:31	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 01:31	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 01:31	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 01:31	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 01:31	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 01:31	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 01:31	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 01:31	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 01:31	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 01:31	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 01:31	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 01:31	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 01:31	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 01:31	WG793664
(S) Toluene-d8	109			90.0-115		06/10/2015 01:31	WG793664
(S) Dibromofluoromethane	113			79.0-121		06/10/2015 01:31	WG793664
(S) 4-Bromofluorobenzene	98.2			80.1-120		06/10/2015 01:31	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.280		0.0220	0.100	1	06/06/2015 21:28	WG793561
C28-C40 Oil Range	0.0730	J	0.0120	0.100	1	06/06/2015 21:28	WG793561
(S) o-Terphenyl	105			50.0-150		06/06/2015 21:28	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 20:13	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 20:13	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 20:13	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 20:13	WG794004
(S) 2-Fluorophenol	53.7			10.0-77.9		06/08/2015 20:13	WG794004
(S) Phenol-d5	35.7			5.00-70.1		06/08/2015 20:13	WG794004
(S) Nitrobenzene-d5	74.5			21.8-123		06/08/2015 20:13	WG794004



Collected date/time: 06/02/15 17:40

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Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	79.1			29.5-131		06/08/2015 20:13	WG794004
(S) 2,4,6-Tribromophenol	83.4			11.2-130		06/08/2015 20:13	WG794004
(S) p-Terphenyl-d14	73.0			29.3-137		06/08/2015 20:13	WG794004

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	2540		2.80	10.0	1	06/09/2015 16:58	WG793849

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	1.12		0.0200	0.100	1	06/11/2015 04:29	WG794537

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:32	WG793865

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	662		5.20	100	100	06/10/2015 22:56	WG794586
Fluoride	17.4		0.990	10.0	100	06/10/2015 22:56	WG794586
Sulfate	1310		7.70	500	100	06/10/2015 22:56	WG794586

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 21:09	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.00200	0.100	1	06/08/2015 16:30	WG793580
Arsenic	0.00169	J	0.000250	0.00200	1	06/05/2015 11:42	WG793649
Arsenic,Dissolved	0.00146	J	0.000250	0.00200	1	06/08/2015 16:30	WG793580
Barium	0.0198		0.000360	0.00500	1	06/05/2015 11:42	WG793649
Barium,Dissolved	0.0193		0.000360	0.00500	1	06/08/2015 16:30	WG793580
Boron,Dissolved	0.221		0.00150	0.0200	1	06/08/2015 16:30	WG793580
Cadmium,Dissolved	U		0.000160	0.00100	1	06/08/2015 16:30	WG793580
Calcium,Dissolved	421		0.0460	1.00	1	06/08/2015 16:30	WG793580
Chromium	0.000672	J	0.000540	0.00200	1	06/05/2015 11:42	WG793649
Chromium,Dissolved	U		0.000540	0.00200	1	06/08/2015 16:30	WG793580
Copper,Dissolved	0.000868	J	0.000520	0.00500	1	06/08/2015 16:30	WG793580
Cobalt,Dissolved	U		0.000260	0.00200	1	06/08/2015 16:30	WG793580
Iron	0.0278	J	0.0150	0.100	1	06/05/2015 11:42	WG793649
Iron,Dissolved	U		0.0150	0.100	1	06/08/2015 16:30	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 11:42	WG793649
Lead,Dissolved	U		0.000240	0.00200	1	06/08/2015 16:30	WG793580
Manganese	0.000821	J	0.000250	0.00500	1	06/05/2015 11:42	WG793649
Manganese,Dissolved	U		0.000250	0.00500	1	06/08/2015 16:30	WG793580
Molybdenum,Dissolved	0.00220	J	0.000140	0.00500	1	06/08/2015 16:30	WG793580
Nickel	0.00107	J	0.000350	0.00200	1	06/05/2015 11:42	WG793649
Nickel,Dissolved	0.000529	J	0.000350	0.00200	1	06/08/2015 16:30	WG793580
Potassium,Dissolved	1.71		0.0370	1.00	1	06/08/2015 16:30	WG793580
Selenium	0.00363		0.000380	0.00200	1	06/05/2015 11:42	WG793649
Selenium,Dissolved	0.00368		0.000380	0.00200	1	06/08/2015 16:30	WG793580
Silver,Dissolved	U		0.000310	0.00200	1	06/08/2015 16:30	WG793580
Sodium,Dissolved	70.3		0.110	1.00	1	06/08/2015 16:30	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.0109		0.000330	0.0100	1	06/08/2015 16:30	WG793580
Vanadium	0.00913		0.000180	0.00500	1	06/05/2015 11:42	WG793649
Vanadium,Dissolved	0.00897		0.000180	0.00500	1	06/08/2015 16:30	WG793580
Zinc,Dissolved	U		0.00260	0.0250	1	06/08/2015 16:30	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 22:32	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.4			62.0-128		06/11/2015 22:32	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 01:54	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 01:54	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 01:54	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 01:54	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 01:54	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 01:54	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 01:54	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 01:54	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 01:54	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 01:54	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 01:54	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 01:54	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 01:54	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 01:54	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 01:54	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 01:54	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 01:54	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 01:54	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 01:54	WG793664
(S) Toluene-d8	109			90.0-115		06/10/2015 01:54	WG793664
(S) Dibromofluoromethane	111			79.0-121		06/10/2015 01:54	WG793664
(S) 4-Bromofluorobenzene	97.4			80.1-120		06/10/2015 01:54	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0330	J	0.0220	0.100	1	06/06/2015 21:46	WG793561
C28-C40 Oil Range	0.0220	J	0.0120	0.100	1	06/06/2015 21:46	WG793561
(S) o-Terphenyl	114			50.0-150		06/06/2015 21:46	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/08/2015 20:36	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/08/2015 20:36	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/08/2015 20:36	WG794004
Naphthalene	U		0.000370	0.00100	1	06/08/2015 20:36	WG794004
(S) 2-Fluorophenol	56.7			10.0-77.9		06/08/2015 20:36	WG794004
(S) Phenol-d5	37.2			5.00-70.1		06/08/2015 20:36	WG794004
(S) Nitrobenzene-d5	79.1			21.8-123		06/08/2015 20:36	WG794004



Collected date/time: 06/03/15 08:30

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Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	80.3			29.5-131		06/08/2015 20:36	WG794004
(S) 2,4,6-Tribromophenol	77.2			11.2-130		06/08/2015 20:36	WG794004
(S) p-Terphenyl-d14	75.7			29.3-137		06/08/2015 20:36	WG794004

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	3520		2.80	10.0	1	06/09/2015 16:58	WG793849

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	15.7		0.0390	0.200	2	06/11/2015 04:43	WG794537

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:33	WG793865

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	634		5.20	100	100	06/10/2015 20:38	WG794587
Fluoride	22.6		0.990	10.0	100	06/10/2015 20:38	WG794587
Sulfate	1500		7.70	500	100	06/10/2015 20:38	WG794587

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 21:17	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.00200	0.100	1	06/08/2015 16:32	WG793580
Arsenic	0.00128	J	0.000250	0.00200	1	06/05/2015 11:45	WG793649
Arsenic,Dissolved	0.00112	J	0.000250	0.00200	1	06/08/2015 16:32	WG793580
Barium	0.0143		0.000360	0.00500	1	06/05/2015 11:45	WG793649
Barium,Dissolved	0.0140		0.000360	0.00500	1	06/08/2015 16:32	WG793580
Boron,Dissolved	0.485		0.00150	0.0200	1	06/08/2015 16:32	WG793580
Cadmium,Dissolved	U		0.000160	0.00100	1	06/08/2015 16:32	WG793580
Calcium,Dissolved	532		0.230	5.00	5	06/08/2015 17:17	WG793580
Chromium	0.000894	J	0.000540	0.00200	1	06/05/2015 11:45	WG793649
Chromium,Dissolved	U		0.000540	0.00200	1	06/08/2015 16:32	WG793580
Copper,Dissolved	0.00103	J	0.000520	0.00500	1	06/08/2015 16:32	WG793580
Cobalt,Dissolved	U		0.000260	0.00200	1	06/08/2015 16:32	WG793580
Iron	0.0429	J	0.0150	0.100	1	06/05/2015 11:45	WG793649
Iron,Dissolved	U		0.0150	0.100	1	06/08/2015 16:32	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 11:45	WG793649
Lead,Dissolved	U		0.000240	0.00200	1	06/08/2015 16:32	WG793580
Manganese	0.000664	J	0.000250	0.00500	1	06/05/2015 11:45	WG793649
Manganese,Dissolved	U		0.000250	0.00500	1	06/08/2015 16:32	WG793580
Molybdenum,Dissolved	0.00371	J	0.000140	0.00500	1	06/08/2015 16:32	WG793580
Nickel	0.00188	J	0.000350	0.00200	1	06/05/2015 11:45	WG793649
Nickel,Dissolved	0.000708	J	0.000350	0.00200	1	06/08/2015 16:32	WG793580
Potassium,Dissolved	1.20		0.0370	1.00	1	06/08/2015 16:32	WG793580
Selenium	0.0113		0.000380	0.00200	1	06/05/2015 11:45	WG793649
Selenium,Dissolved	0.0115		0.000380	0.00200	1	06/08/2015 16:32	WG793580
Silver,Dissolved	U		0.000310	0.00200	1	06/08/2015 16:32	WG793580
Sodium,Dissolved	101		0.110	1.00	1	06/08/2015 16:32	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.0232		0.000330	0.0100	1	06/08/2015 16:32	WG793580
Vanadium	0.0111		0.000180	0.00500	1	06/05/2015 11:45	WG793649
Vanadium,Dissolved	0.0111		0.000180	0.00500	1	06/08/2015 16:32	WG793580
Zinc,Dissolved	U		0.00260	0.0250	1	06/08/2015 16:32	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 22:54	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.6			62.0-128		06/11/2015 22:54	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 02:17	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 02:17	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 02:17	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 02:17	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 02:17	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 02:17	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 02:17	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 02:17	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 02:17	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 02:17	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 02:17	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 02:17	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 02:17	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 02:17	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 02:17	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 02:17	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 02:17	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 02:17	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 02:17	WG793664
(S) Toluene-d8	110			90.0-115		06/10/2015 02:17	WG793664
(S) Dibromofluoromethane	111			79.0-121		06/10/2015 02:17	WG793664
(S) 4-Bromofluorobenzene	97.3			80.1-120		06/10/2015 02:17	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0260	J	0.0220	0.100	1	06/06/2015 22:04	WG793561
C28-C40 Oil Range	0.0160	J	0.0120	0.100	1	06/06/2015 22:04	WG793561
(S) o-Terphenyl	106			50.0-150		06/06/2015 22:04	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/09/2015 15:35	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/09/2015 15:35	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/09/2015 15:35	WG794004
Naphthalene	U		0.000370	0.00100	1	06/09/2015 15:35	WG794004
(S) 2-Fluorophenol	64.3			10.0-77.9		06/09/2015 15:35	WG794004
(S) Phenol-d5	42.2			5.00-70.1		06/09/2015 15:35	WG794004
(S) Nitrobenzene-d5	75.0			21.8-123		06/09/2015 15:35	WG794004

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	80.5			29.5-131		06/09/2015 15:35	WG794004
(S) 2,4,6-Tribromophenol	88.5			11.2-130		06/09/2015 15:35	WG794004
(S) p-Terphenyl-d14	78.3			29.3-137		06/09/2015 15:35	WG794004

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	2220		2.80	10.0	1	06/09/2015 16:58	WG793849

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	4.75		0.0200	0.100	1	06/11/2015 04:31	WG794537

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:34	WG793865

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	689		5.20	100	100	06/10/2015 20:52	WG794587
Fluoride	15.7		0.990	10.0	100	06/10/2015 20:52	WG794587
Sulfate	1050		7.70	500	100	06/10/2015 20:52	WG794587

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 21:20	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.00200	0.100	1	06/08/2015 16:35	WG793580
Arsenic	0.00203		0.000250	0.00200	1	06/05/2015 12:23	WG793649
Arsenic,Dissolved	U		0.000250	0.00200	1	06/08/2015 16:35	WG793580
Barium	0.0149		0.000360	0.00500	1	06/05/2015 12:23	WG793649
Barium,Dissolved	0.00240	J	0.000360	0.00500	1	06/08/2015 16:35	WG793580
Boron,Dissolved	0.0341		0.00150	0.0200	1	06/08/2015 16:35	WG793580
Cadmium,Dissolved	U		0.000160	0.00100	1	06/08/2015 16:35	WG793580
Calcium,Dissolved	0.873	J	0.0460	1.00	1	06/08/2015 16:35	WG793580
Chromium	U		0.000540	0.00200	1	06/05/2015 12:23	WG793649
Chromium,Dissolved	U		0.000540	0.00200	1	06/08/2015 16:35	WG793580
Copper,Dissolved	0.00108	J	0.000520	0.00500	1	06/08/2015 16:35	WG793580
Cobalt,Dissolved	U		0.000260	0.00200	1	06/08/2015 16:35	WG793580
Iron	0.0182	J	0.0150	0.100	1	06/05/2015 12:23	WG793649
Iron,Dissolved	U		0.0150	0.100	1	06/08/2015 16:35	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 12:23	WG793649
Lead,Dissolved	U		0.000240	0.00200	1	06/08/2015 16:35	WG793580
Manganese	0.0146		0.000250	0.00500	1	06/05/2015 12:23	WG793649
Manganese,Dissolved	U		0.000250	0.00500	1	06/08/2015 16:35	WG793580
Molybdenum,Dissolved	U		0.000140	0.00500	1	06/08/2015 16:35	WG793580
Nickel	0.00485		0.000350	0.00200	1	06/05/2015 12:23	WG793649
Nickel,Dissolved	U		0.000350	0.00200	1	06/08/2015 16:35	WG793580
Potassium,Dissolved	U		0.0370	1.00	1	06/08/2015 16:35	WG793580
Selenium	0.00293		0.000380	0.00200	1	06/05/2015 12:23	WG793649
Selenium,Dissolved	U		0.000380	0.00200	1	06/08/2015 16:35	WG793580
Silver,Dissolved	U		0.000310	0.00200	1	06/08/2015 16:35	WG793580
Sodium,Dissolved	0.305	J	0.110	1.00	1	06/08/2015 16:35	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	U		0.000330	0.0100	1	06/08/2015 16:35	WG793580
Vanadium	0.0119		0.000180	0.00500	1	06/05/2015 12:23	WG793649
Vanadium,Dissolved	0.000249	J	0.000180	0.00500	1	06/08/2015 16:35	WG793580
Zinc,Dissolved	U		0.00260	0.0250	1	06/08/2015 16:35	WG793580

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 23:16	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.3			62.0-128		06/11/2015 23:16	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 02:40	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 02:40	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 02:40	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 02:40	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 02:40	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 02:40	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 02:40	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 02:40	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 02:40	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 02:40	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 02:40	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 02:40	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 02:40	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 02:40	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 02:40	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 02:40	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 02:40	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 02:40	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 02:40	WG793664
(S) Toluene-d8	109			90.0-115		06/10/2015 02:40	WG793664
(S) Dibromofluoromethane	111			79.0-121		06/10/2015 02:40	WG793664
(S) 4-Bromofluorobenzene	99.3			80.1-120		06/10/2015 02:40	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0270	J	0.0220	0.100	1	06/06/2015 22:22	WG793561
C28-C40 Oil Range	0.0130	J	0.0120	0.100	1	06/06/2015 22:22	WG793561
(S) o-Terphenyl	104			50.0-150		06/06/2015 22:22	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/09/2015 15:59	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/09/2015 15:59	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/09/2015 15:59	WG794004
Naphthalene	U		0.000370	0.00100	1	06/09/2015 15:59	WG794004
(S) 2-Fluorophenol	55.4			10.0-77.9		06/09/2015 15:59	WG794004
(S) Phenol-d5	38.9			5.00-70.1		06/09/2015 15:59	WG794004
(S) Nitrobenzene-d5	78.5			21.8-123		06/09/2015 15:59	WG794004



Collected date/time: 06/03/15 10:25

L768982

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	78.3			29.5-131		06/09/2015 15:59	WG794004
(S) 2,4,6-Tribromophenol	85.6			11.2-130		06/09/2015 15:59	WG794004
(S) p-Terphenyl-d14	80.0			29.3-137		06/09/2015 15:59	WG794004

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Dissolved Solids	14.0		2.80	10.0	1	06/09/2015 16:59	WG793849

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Nitrate-Nitrite	0.0993	J	0.0200	0.100	1	06/11/2015 04:32	WG794537

Wet Chemistry by Method 9012B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Cyanide	U		0.00180	0.00500	1	06/10/2015 15:35	WG793865

Wet Chemistry by Method 9056MOD

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Chloride	6.77		0.0520	1.00	1	06/10/2015 17:23	WG794587
Fluoride	0.0579	J	0.00990	0.100	1	06/10/2015 17:23	WG794587
Sulfate	6.91		0.0770	5.00	1	06/10/2015 17:23	WG794587

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury	U		0.0000490	0.000200	1	06/05/2015 21:23	WG793530

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Aluminum,Dissolved	U		0.00200	0.100	1	06/08/2015 16:37	WG793580
Arsenic	U		0.000250	0.00200	1	06/05/2015 12:26	WG793649
Arsenic,Dissolved	0.00182	J	0.000250	0.00200	1	06/08/2015 16:37	WG793580
Barium	0.00199	J	0.000360	0.00500	1	06/05/2015 12:26	WG793649
Barium,Dissolved	0.0138		0.000360	0.00500	1	06/08/2015 16:37	WG793580
Boron,Dissolved	0.277		0.00150	0.0200	1	06/08/2015 16:37	WG793580
Cadmium,Dissolved	U		0.000160	0.00100	1	06/08/2015 16:37	WG793580
Calcium,Dissolved	338		0.0460	1.00	1	06/08/2015 16:37	WG793580
Chromium	U		0.000540	0.00200	1	06/05/2015 12:26	WG793649
Chromium,Dissolved	U		0.000540	0.00200	1	06/08/2015 16:37	WG793580
Copper,Dissolved	0.00436	J	0.000520	0.00500	1	06/08/2015 16:37	WG793580
Cobalt,Dissolved	U		0.000260	0.00200	1	06/08/2015 16:37	WG793580
Iron	U		0.0150	0.100	1	06/05/2015 12:26	WG793649
Iron,Dissolved	U		0.0150	0.100	1	06/08/2015 16:37	WG793580
Lead	U		0.000240	0.00200	1	06/05/2015 12:26	WG793649
Lead,Dissolved	U		0.000240	0.00200	1	06/08/2015 16:37	WG793580
Manganese	U		0.000250	0.00500	1	06/05/2015 12:26	WG793649
Manganese,Dissolved	0.00991		0.000250	0.00500	1	06/08/2015 16:37	WG793580
Molybdenum,Dissolved	0.00794		0.000140	0.00500	1	06/08/2015 16:37	WG793580
Nickel	0.000471	J	0.000350	0.00200	1	06/05/2015 12:26	WG793649
Nickel,Dissolved	0.00417		0.000350	0.00200	1	06/08/2015 16:37	WG793580
Potassium,Dissolved	1.61		0.0370	1.00	1	06/08/2015 16:37	WG793580
Selenium	U		0.000380	0.00200	1	06/05/2015 12:26	WG793649
Selenium,Dissolved	0.00285		0.000380	0.00200	1	06/08/2015 16:37	WG793580
Silver,Dissolved	U		0.000310	0.00200	1	06/08/2015 16:37	WG793580
Sodium,Dissolved	91.9		0.110	1.00	1	06/08/2015 16:37	WG793580



Metals (ICPMS) by Method 6020

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Uranium,Dissolved	0.0135		0.000330	0.0100	1	06/08/2015 16:37	WG793580
Vanadium	0.000389	J	0.000180	0.00500	1	06/05/2015 12:26	WG793649
Vanadium,Dissolved	0.0122		0.000180	0.00500	1	06/08/2015 16:37	WG793580
Zinc,Dissolved	U		0.00260	0.0250	1	06/08/2015 16:37	WG793580

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0310	0.100	1	06/11/2015 23:38	WG793965
(S) a,a,a-Trifluorotoluene(FID)	90.3			62.0-128		06/11/2015 23:38	WG793965

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	U		0.000330	0.00100	1	06/10/2015 03:03	WG793664
Carbon tetrachloride	U		0.000380	0.00100	1	06/10/2015 03:03	WG793664
Chloroform	U		0.000320	0.00500	1	06/10/2015 03:03	WG793664
1,2-Dibromoethane	U		0.000380	0.00100	1	06/10/2015 03:03	WG793664
1,1-Dichloroethane	U		0.000260	0.00100	1	06/10/2015 03:03	WG793664
1,2-Dichloroethane	U		0.000360	0.00100	1	06/10/2015 03:03	WG793664
1,1-Dichloroethene	U		0.000400	0.00100	1	06/10/2015 03:03	WG793664
Ethylbenzene	U		0.000380	0.00100	1	06/10/2015 03:03	WG793664
Methylene Chloride	U		0.00100	0.00500	1	06/10/2015 03:03	WG793664
1,1,1,2-Tetrachloroethane	U		0.000380	0.00100	1	06/10/2015 03:03	WG793664
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	06/10/2015 03:03	WG793664
Toluene	U		0.000780	0.00500	1	06/10/2015 03:03	WG793664
1,1,1-Trichloroethane	U		0.000319	0.00100	1	06/10/2015 03:03	WG793664
Tetrachloroethene	U		0.000372	0.00100	1	06/10/2015 03:03	WG793664
1,1,2-Trichloroethane	U		0.000380	0.00100	1	06/10/2015 03:03	WG793664
Vinyl chloride	U		0.000260	0.00100	1	06/10/2015 03:03	WG793664
o-Xylene	U		0.000340	0.00100	1	06/10/2015 03:03	WG793664
m&p-Xylene	U		0.000720	0.00200	1	06/10/2015 03:03	WG793664
Xylenes, Total	U		0.00110	0.00300	1	06/10/2015 03:03	WG793664
(S) Toluene-d8	109			90.0-115		06/10/2015 03:03	WG793664
(S) Dibromofluoromethane	110			79.0-121		06/10/2015 03:03	WG793664
(S) 4-Bromofluorobenzene	100			80.1-120		06/10/2015 03:03	WG793664

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	0.0280	J	0.0220	0.100	1	06/06/2015 22:40	WG793561
C28-C40 Oil Range	U		0.0120	0.100	1	06/06/2015 22:40	WG793561
(S) o-Terphenyl	108			50.0-150		06/06/2015 22:40	WG793561

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Benzo(a)pyrene	U		0.000340	0.00100	1	06/09/2015 16:22	WG794004
1-Methylnaphthalene	U		0.000330	0.00100	1	06/09/2015 16:22	WG794004
2-Methylnaphthalene	U		0.000310	0.00100	1	06/09/2015 16:22	WG794004
Naphthalene	U		0.000370	0.00100	1	06/09/2015 16:22	WG794004
(S) 2-Fluorophenol	60.9			10.0-77.9		06/09/2015 16:22	WG794004
(S) Phenol-d5	41.0			5.00-70.1		06/09/2015 16:22	WG794004
(S) Nitrobenzene-d5	80.4			21.8-123		06/09/2015 16:22	WG794004



Collected date/time: 06/03/15 10:45

L768982

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	83.2			29.5-131		06/09/2015 16:22	WG794004
(S) 2,4,6-Tribromophenol	96.2			11.2-130		06/09/2015 16:22	WG794004
(S) p-Terphenyl-d14	81.8			29.3-137		06/09/2015 16:22	WG794004

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) 06/06/15 13:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		2.82	10.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

L768982-10 Original Sample (OS) • Duplicate (DUP)

(OS) 06/06/15 14:06 • (DUP) 06/06/15 14:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	5420	5360	1	1.11		5

⁷ Gl

⁸ Al

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/06/15 14:02 • (LCSD) 06/06/15 14:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800	8700	8710	98.9	99.0	85.0-115			0.115	5

⁹ Sc



Method Blank (MB)

(MB) 06/09/15 16:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		2.82	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L769234-04 Original Sample (OS) • Duplicate (DUP)

(OS) 06/09/15 17:00 • (DUP) 06/09/15 17:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	4690	4770	1	1.69		5

⁷Gl

⁸Al

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/09/15 16:57 • (LCSD) 06/09/15 16:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800	8680	8690	98.6	98.8	85.0-115			0.115	5

⁹Sc



Method Blank (MB)

(MB) 06/11/15 04:00

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0197	0.100

L768594-02 Original Sample (OS) • Duplicate (DUP)

(OS) 06/11/15 04:17 • (DUP) 06/11/15 04:18

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.90	0.93	1	3.3		20

L768958-01 Original Sample (OS) • Duplicate (DUP)

(OS) 06/11/15 04:37 • (DUP) 06/11/15 04:38

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.29	0.32	1	9.8		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/11/15 04:04 • (LCSD) 06/11/15 04:05

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Nitrate-Nitrite	5.00	4.79	5.06	95.8	101	90.0-110			5.48	20

L768947-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/11/15 04:34 • (MS) 06/11/15 04:35 • (MSD) 06/11/15 04:36

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	5.00	0.675	5.38	5.38	94.0	94.0	1	90.0-110			0.000	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) 06/10/15 15:04

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Cyanide	U		0.00180	0.00500

L768965-02 Original Sample (OS) • Duplicate (DUP)

(OS) 06/10/15 15:14 • (DUP) 06/10/15 15:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Cyanide	ND	ND	1	0.00		20

L768982-11 Original Sample (OS) • Duplicate (DUP)

(OS) 06/10/15 15:30 • (DUP) 06/10/15 15:31

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Cyanide	ND	ND	1	0.00		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/10/15 15:06 • (LCSD) 06/10/15 15:07

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Cyanide	0.100	0.105	0.100	105	100	90.0-110			4.88	20

L768982-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/10/15 15:18 • (MS) 06/10/15 15:19 • (MSD) 06/10/15 15:20

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Cyanide	0.200	0.00240	0.210	0.182	104	89.8	1	90.0-110		F	14.3	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) 06/10/15 12:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.0519	1.00
Fluoride	U		0.0099	0.100
Sulfate	U		0.0774	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L768939-06 Original Sample (OS) • Duplicate (DUP)

(OS) 06/10/15 13:25 • (DUP) 06/10/15 13:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	17.4	16.4	1	6		20
Fluoride	0.221	0.458	1	70	*	20
Sulfate	7.97	8.03	1	1		20

L768982-11 Original Sample (OS) • Duplicate (DUP)

(OS) 06/10/15 17:47 • (DUP) 06/10/15 18:03

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	6.07	6.12	1	1		20
Fluoride	0.0848	0.0747	1	13	J	20
Sulfate	0.153	0.109	1	34	* J	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/10/15 12:23 • (LCSD) 06/10/15 12:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	40.3	39.9	101	100	90-110			1	20
Fluoride	8.00	8.07	8.02	101	100	90-110			1	20
Sulfate	40.0	40.6	40.3	101	101	90-110			1	20

L768982-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/10/15 14:42 • (MS) 06/10/15 14:58 • (MSD) 06/10/15 15:13

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
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[L768982-01,02,03,04,05,06,07,08,09,10,11,12](#)

Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%	%
Chloride	50.0	6.15	57.0	52.3	102	92	1	80-120	9 20
Fluoride	5.00	0.0811	5.25	5.27	103	104	1	80-120	0 20
Sulfate	50.0	0.0938	50.3	52.2	100	104	1	80-120	4 20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) 06/10/15 09:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.0519	1.00
Fluoride	U		0.0099	0.100
Sulfate	U		0.0774	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L769099-01 Original Sample (OS) • Duplicate (DUP)

(OS) 06/10/15 13:55 • (DUP) 06/10/15 14:08

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	82.6	82.9	1	0		20
Fluoride	0.0601	0.0507	1	0		20
Sulfate	28.6	28.3	1	1		20

L769051-04 Original Sample (OS) • Duplicate (DUP)

(OS) 06/10/15 17:37 • (DUP) 06/10/15 17:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	14.3	14.1	1	1		20
Fluoride	0.610	0.614	1	1		20
Sulfate	38.9	38.8	1	0		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/10/15 09:36 • (LCSD) 06/10/15 09:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	40.0	40.4	40.4	101	101	90-110			0	20
Fluoride	8.00	8.11	8.13	101	102	90-110			0	20
Sulfate	40.0	41.8	41.8	104	104	90-110			0	20

L769051-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/10/15 18:33 • (MS) 06/10/15 18:47 • (MSD) 06/10/15 19:01

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
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[L768982-13,14,15](#)

Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%		%	
Fluoride	5.00	0.721	5.98	6.05	105	107	1	80-120		1	20
Sulfate	50.0	77.5	0.000	0.000	0	0	1	80-120	<u>F</u>	<u>F</u>	0 20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) 06/05/15 19:55

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.000049	0.000200

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/05/15 19:58 • (LCSD) 06/05/15 20:06

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	0.00325	0.00317	108	106	80-120			3	20

L768898-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/05/15 20:09 • (MS) 06/05/15 20:12 • (MSD) 06/05/15 20:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	0.0000829	0.00324	0.00331	105	108	1	75-125			2	20



Method Blank (MB)

(MB) 06/07/15 17:36

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum,Dissolved	0.00413		0.002	0.100
Arsenic,Dissolved	0.000269		0.00025	0.00200
Barium,Dissolved	U		0.00036	0.00500
Boron,Dissolved	U		0.0015	0.0200
Cadmium,Dissolved	U		0.00016	0.00100
Calcium,Dissolved	U		0.046	1.00
Chromium,Dissolved	U		0.00054	0.00200
Copper,Dissolved	U		0.00052	0.00500
Cobalt,Dissolved	U		0.00026	0.00200
Iron,Dissolved	U		0.015	0.100
Lead,Dissolved	U		0.00024	0.00200
Manganese,Dissolved	U		0.00025	0.00500
Molybdenum,Dissolved	U		0.00014	0.00500
Nickel,Dissolved	U		0.00035	0.00200
Potassium,Dissolved	U		0.037	1.00
Selenium,Dissolved	U		0.00038	0.00200
Silver,Dissolved	U		0.00031	0.00200
Sodium,Dissolved	U		0.11	1.00
Uranium,Dissolved	U		0.00033	0.0100
Vanadium,Dissolved	0.000499		0.00018	0.00500
Zinc,Dissolved	U		0.00256	0.0250

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/07/15 17:38 • (LCSD) 06/07/15 17:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Aluminum,Dissolved	5.00	5.15	4.96	103	99	80-120			4	20
Arsenic,Dissolved	0.0500	0.0518	0.0513	104	103	80-120			1	20
Barium,Dissolved	0.0500	0.0488	0.0495	98	99	80-120			1	20
Boron,Dissolved	0.0500	0.0479	0.0470	96	94	80-120			2	20
Cadmium,Dissolved	0.0500	0.0514	0.0511	103	102	80-120			1	20
Calcium,Dissolved	5.00	5.26	4.81	105	96	80-120			9	20
Chromium,Dissolved	0.0500	0.0510	0.0489	102	98	80-120			4	20
Copper,Dissolved	0.0500	0.0530	0.0510	106	102	80-120			4	20
Cobalt,Dissolved	0.0500	0.0515	0.0492	103	98	80-120			5	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/07/15 17:38 • (LCSD) 06/07/15 17:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Iron,Dissolved	5.00	4.96	4.74	99	95	80-120			4	20
Lead,Dissolved	0.0500	0.0511	0.0500	102	100	80-120			2	20
Manganese,Dissolved	0.0500	0.0517	0.0488	103	98	80-120			6	20
Molybdenum,Dissolved	0.0500	0.0509	0.0498	102	100	80-120			2	20
Nickel,Dissolved	0.0500	0.0521	0.0493	104	99	80-120			6	20
Potassium,Dissolved	5.00	5.20	4.97	104	99	80-120			5	20
Selenium,Dissolved	0.0500	0.0509	0.0512	102	102	80-120			1	20
Silver,Dissolved	0.0500	0.0515	0.0509	103	102	80-120			1	20
Sodium,Dissolved	5.00	5.37	5.15	107	103	80-120			4	20
Uranium,Dissolved	0.0500	0.0504	0.0489	101	98	80-120			3	20
Vanadium,Dissolved	0.0500	0.0512	0.0487	102	97	80-120			5	20
Zinc,Dissolved	0.0500	0.0499	0.0488	100	98	80-120			2	20

L768982-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/07/15 17:43 • (MS) 06/07/15 17:47 • (MSD) 06/07/15 17:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum,Dissolved	5.00	0.0117	5.20	5.35	104	107	1	75-125			3	20
Arsenic,Dissolved	0.0500	0.00171	0.0581	0.0606	113	118	1	75-125			4	20
Barium,Dissolved	0.0500	0.0277	0.0818	0.0821	108	109	1	75-125			0	20
Boron,Dissolved	0.0500	0.462	0.504	0.513	84	102	1	75-125			2	20
Cadmium,Dissolved	0.0500	0.0000516	0.0526	0.0552	105	110	1	75-125			5	20
Calcium,Dissolved	5.00	446	463	478	335	643	1	75-125	4	4	3	20
Chromium,Dissolved	0.0500	0.000332	0.0493	0.0508	98	101	1	75-125			3	20
Copper,Dissolved	0.0500	0.00142	0.0495	0.0505	96	98	1	75-125			2	20
Cobalt,Dissolved	0.0500	0.000129	0.0489	0.0499	98	99	1	75-125			2	20
Potassium,Dissolved	5.00	4.32	9.85	10.0	111	114	1	75-125			2	20
Iron,Dissolved	5.00	0.00998	4.78	4.90	95	98	1	75-125			2	20
Lead,Dissolved	0.0500	0.0000795	0.0533	0.0537	106	107	1	75-125			1	20
Manganese,Dissolved	0.0500	0.180	0.226	0.232	91	103	1	75-125			3	20
Molybdenum,Dissolved	0.0500	0.00431	0.0605	0.0612	112	114	1	75-125			1	20
Nickel,Dissolved	0.0500	0.00123	0.0489	0.0502	95	98	1	75-125			3	20
Selenium,Dissolved	0.0500	0.00343	0.0589	0.0622	111	118	1	75-125			5	20
Silver,Dissolved	0.0500	0.0000529	0.0519	0.0529	104	106	1	75-125			2	20
Sodium,Dissolved	5.00	812	877	914	1300	2050	1	75-125	4	4	4	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



L768982-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/07/15 17:43 • (MS) 06/07/15 17:47 • (MSD) 06/07/15 17:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Uranium,Dissolved	0.0500	0.00664	0.0605	0.0615	108	110	1	75-125			2	20
Vanadium,Dissolved	0.0500	0.00340	0.0547	0.0558	103	105	1	75-125			2	20
Zinc,Dissolved	0.0500	0.00159	0.0469	0.0485	91	94	1	75-125			3	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) 06/05/15 09:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic	U		0.00025	0.00200
Barium	U		0.00036	0.00500
Chromium	0.000798		0.00054	0.00200
Iron	U		0.015	0.100
Lead	U		0.00024	0.00200
Manganese	0.000305		0.00025	0.00500
Nickel	0.000764		0.00035	0.00200
Selenium	U		0.00038	0.00200
Vanadium	U		0.00018	0.00500

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/05/15 10:00 • (LCSD) 06/05/15 10:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	0.0500	0.0535	0.0540	107	108	80-120			1	20
Barium	0.0500	0.0473	0.0469	95	94	80-120			1	20
Chromium	0.0500	0.0529	0.0526	106	105	80-120			1	20
Iron	5.00	4.88	4.92	98	98	80-120			1	20
Lead	0.0500	0.0513	0.0503	103	101	80-120			2	20
Manganese	0.0500	0.0509	0.0507	102	101	80-120			0	20
Nickel	0.0500	0.0550	0.0546	110	109	80-120			1	20
Selenium	0.0500	0.0530	0.0520	106	104	80-120			2	20
Vanadium	0.0500	0.0520	0.0522	104	104	80-120			0	20

L768982-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/05/15 10:05 • (MS) 06/05/15 10:10 • (MSD) 06/05/15 10:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	0.0500	0.00162	0.0588	0.0592	114	115	1	75-125			1	20
Barium	0.0500	0.0265	0.0784	0.0779	104	103	1	75-125			1	20
Chromium	0.0500	0.000959	0.0510	0.0514	100	101	1	75-125			1	20
Iron	5.00	0.0931	4.80	4.89	94	96	1	75-125			2	20
Lead	0.0500	0.0000854	0.0517	0.0516	103	103	1	75-125			0	20



L768982-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/05/15 10:05 • (MS) 06/05/15 10:10 • (MSD) 06/05/15 10:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Manganese	0.0500	0.211	0.259	0.259	96	97	1	75-125			0	20
Nickel	0.0500	0.0117	0.0516	0.0519	80	80	1	75-125			1	20
Selenium	0.0500	0.00311	0.0579	0.0564	110	107	1	75-125			3	20
Vanadium	0.0500	0.00368	0.0552	0.0556	103	104	1	75-125			1	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) 06/11/15 13:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	90.5			62.0-128

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/11/15 13:51 • (LCSD) 06/11/15 14:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.84	5.80	106	106	67.0-132			0.570	20
(S) a,a,a-Trifluorotoluene(FID)				99.5	99.5	62.0-128				

L768982-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 06/11/15 15:42 • (MS) 06/11/15 19:24 • (MSD) 06/11/15 19:46

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	5.66	5.48	103	99.6	1	50.0-143			3.24	20
(S) a,a,a-Trifluorotoluene(FID)					98.8	98.5		62.0-128				



Method Blank (MB)

(MB) 06/09/15 21:18

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000331	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chloroform	U		0.000324	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
Ethylbenzene	U		0.000384	0.00100
Methylene Chloride	U		0.00100	0.00500
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000780	0.00500
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
o-Xylene	U		0.000341	0.00100
m&p-Xylenes	U		0.000719	0.00200
(S) Toluene-d8	110			90.0-115
(S) Dibromofluoromethane	110			79.0-121
(S) 4-Bromofluorobenzene	97.8			80.1-120

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/10/15 05:44 • (LCSD) 06/10/15 06:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0304	0.0302	122	121	73.0-122			0.480	20
Carbon tetrachloride	0.0250	0.0300	0.0293	120	117	70.9-129			2.62	20
Chloroform	0.0250	0.0296	0.0303	118	121	73.2-125			2.28	20
1,2-Dibromoethane	0.0250	0.0249	0.0258	99.4	103	79.8-122			3.86	20
1,1-Dichloroethane	0.0250	0.0307	0.0310	123	124	71.7-127			1.09	20
1,2-Dichloroethane	0.0250	0.0296	0.0307	119	123	65.3-126			3.54	20
1,1-Dichloroethene	0.0250	0.0305	0.0293	122	117	59.9-137			4.16	20
Ethylbenzene	0.0250	0.0249	0.0250	99.7	99.9	80.9-121			0.160	20



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/10/15 05:44 • (LCSD) 06/10/15 06:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Methylene Chloride	0.0250	0.0298	0.0301	119	120	69.5-120			0.890	20
1,1,1,2-Tetrachloroethane	0.0250	0.0242	0.0251	97.0	101	78.5-125			3.64	20
1,1,2,2-Tetrachloroethane	0.0250	0.0256	0.0265	102	106	79.3-123			3.48	20
Tetrachloroethene	0.0250	0.0250	0.0248	99.9	99.3	73.5-130			0.660	20
Toluene	0.0250	0.0265	0.0262	106	105	77.9-116			1.28	20
1,1,1-Trichloroethane	0.0250	0.0298	0.0291	119	116	71.1-129			2.61	20
1,1,2-Trichloroethane	0.0250	0.0244	0.0257	97.7	103	81.6-120			4.91	20
Vinyl chloride	0.0250	0.0273	0.0262	109	105	61.5-134			4.07	20
Xylenes, Total	0.0750	0.0757	0.0761	101	102	79.2-122			0.630	20
o-Xylene	0.0250	0.0252	0.0255	101	102	79.1-123			1.29	20
m&p-Xylenes	0.0500	0.0505	0.0506	101	101	78.5-122			0.300	20
(S) Toluene-d8				106	104	90.0-115				
(S) Dibromofluoromethane				109	109	79.0-121				
(S) 4-Bromofluorobenzene				101	101	80.1-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) 06/06/15 16:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
C10-C28 Diesel Range	U		0.0222	0.100
C28-C40 Oil Range	U		0.0118	0.100
(S) o-Terphenyl	109			50.0-150

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/06/15 16:42 • (LCSD) 06/06/15 17:00

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	1.50	1.43	1.56	95.5	104	70.0-130			8.68	20
(S) o-Terphenyl				107	122	50.0-150				



Method Blank (MB)

(MB) 06/08/15 11:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzo(a)pyrene	U		0.000340	0.00100
1-Methylnaphthalene	U		0.000332	0.00100
2-Methylnaphthalene	U		0.000311	0.00100
Naphthalene	U		0.000372	0.00100
(S) Nitrobenzene-d5	71.0			21.8-123
(S) 2-Fluorobiphenyl	67.0			29.5-131
(S) p-Terphenyl-d14	74.3			29.3-137
(S) Phenol-d5	35.2			5.00-70.1
(S) 2-Fluorophenol	52.5			10.0-77.9
(S) 2,4,6-Tribromophenol	67.4			11.2-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 06/08/15 10:54 • (LCSD) 06/08/15 11:17

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzo(a)pyrene	0.0500	0.0462	0.0470	92.4	94.1	45.6-106			1.78	20
1-Methylnaphthalene	0.0500	0.0409	0.0421	81.9	84.3	34.7-102			2.89	24.9
2-Methylnaphthalene	0.0500	0.0365	0.0376	73.0	75.2	33.8-98.6			2.94	24.2
Naphthalene	0.0500	0.0350	0.0347	69.9	69.5	32.2-101			0.600	23.8
(S) Nitrobenzene-d5				77.2	72.8	21.8-123				
(S) 2-Fluorobiphenyl				84.0	80.5	29.5-131				
(S) p-Terphenyl-d14				72.9	73.2	29.3-137				
(S) Phenol-d5				36.1	33.6	5.00-70.1				
(S) 2-Fluorophenol				55.7	45.8	10.0-77.9				
(S) 2,4,6-Tribromophenol				97.4	95.1	11.2-130				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier Description

4	The sample concentration was greater than 4 times the spike value.
*	LCS/LCSD recovery outside the control limit or RPD value outside the control limit.
F	The MS/MSD recovery outside the control limit.
J	Estimated value.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



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State Accreditations

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

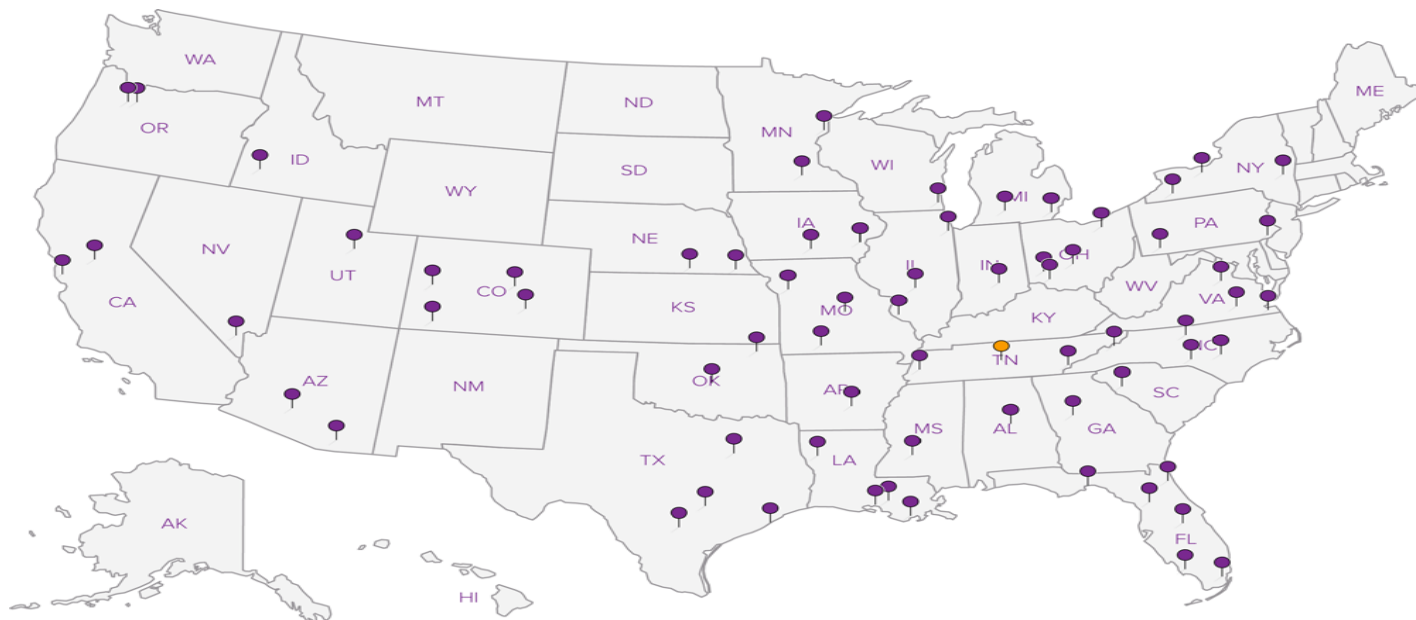
¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA–Crypto	TN00003	USDA	S-67674

Our Locations

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





YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# **L768982**

Table #

Acctnum: **ARCADHTX**

Template: **T102918**

Prelogin: **P511077**

TSR: **633 - Pam Langford**

PB: **5-26-15**

Shipped Via: **FedEX Ground**

Rem./Contaminant Sample # (lab only)

Analysis / Container / Preservative

CL, FL, SO4 125mlHDPE-NoPres	CN 250mlHDPEAmb-NaOH ^{1/2}	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	NAVAJO METALS, DIS 500mlHDPE-HNO3 ^{1/2}	NAVAJO METALS, TOT 500mlHDPE-HNO3 ^{1/2}	NO2NO3 250mlHDPE-H2SO4 ^{1/2}	RA226, RA228 1L-HDPE-Add HNO3 ^{1/2}	SV8270 100ml Amb NoPres	TDS 250mlHDPE-NoPres
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ARCADIS US - TX

2929 Briarpark Dr., Suite 300
Houston, TX 77042

Billing Information:
Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129

Report to:
Pam Krueger:

Email To: pam.krueger@arcadis-us.com;maisha.turner@arcadis-

Project
Description: **Navajo Refining Company - Artesia, NM**

City/State
Collected:

Phone: **713-953-4800**
Fax:

Client Project #
TX000836.0008.00004

Lab Project #
ARCADHTX-NAVAJO

Collected by (print):
Ron Wood

Site/Facility ID #
BACKGROUND

P.O. #

Collected by (signature):
Ron Wood

Rush? (Lab MUST Be Notified)
Same Day200%
Next Day100%
Two Day50%
Three Day25%

Date Results Needed

Email? ☐ No ☒ Yes

FAX? ☐ No ☐ Yes

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
MW-13-0615-BG	G	GW	—	6/1/15	1520	16
MW-12-0615-BG	G	GW	—	6/1/15	1630	16
EB-31-0615-BG	G	GW	—	6/1/15	1740	16
MW-25-0615-BG	G	GW	—	6/2/15	0900	16
MW-17-0615-BG	G	GW	—	6/2/15	1030	16
NP-5-0615-BG	G	GW	—	6/2/15	1150	16
MW-136-0615-BG	G	GW	—	6/2/15	1330	16
MW-55-0615-BG	G	GW	—	6/2/15	1450	16
UG-4-0615-BG	G	GW	—	6/2/15	1630	16
DUP-12-0615-BG	G	GW	—	—	—	16

* Matrix: SS - Soil GW - Groundwater WW - Waste Water DW - Drinking Water OT - Other
Remarks: **6320 8705 3980** **6320 8705 3987**
Please ensure 5 day TAT is met **6320 8705 3977**

pH **6320 8705 3968** Temp **6320 8705 3990**

Flow _____ Other _____

Hold #

Relinquished by: (Signature)
Ron Wood
Relinquished by: (Signature)
Ron Wood
Relinquished by: (Signature)

Date:
6/3/15
Date:
Date:

Time:
1245
Time:
Time:

Received by: (Signature)
Ron Wood
Received by: (Signature)
Ron Wood
Received for lab by: (Signature)
Ron Wood

Samples returned via: ☐ UPS
☒ FedEx ☐ Courier ☐ _____
Temp: **3.6** °C Bottles Received: **241**
Date: **6/4/15** Time: **0900**

Condition: (lab use only)
Adj in lab w/2.5N GIX
H2SO4@1033
COC Seal Intact: ☒ Y ☐ N ☐ NA
pH Checked: **42, >12** NCF:



YOUR LAB OF CHOICE

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Mount Juliet, TN 37122
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Phone: 800-767-5859
Fax: 615-758-5859



L # **L768982**

Table #

Acctnum: **ARCADHTX**

Template: **T102918**

Prelogin: **P511077**

TSR: 633 - Pam Langford

PB: **5-26-15**

Shipped Via: **FedEX Ground**

Rem./Contaminant Sample # (lab only)

Analysis / Container / Preservative

CL, FL, SO4 125mlHDPE-NoPres	CN 250mlHDPEAmb-NaOH ²	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	NAVAJO METALS, DIS 500mlHDPE-HNO3 ²	NAVAJO METALS, TOT 500mlHDPE-HNO3 ²	NO2NO3 250mlHDPE-H2SO4 ²	RA226, RA228 1L-HDPE-Add HNO3 ²	SV8270 100ml Amb NoPres	TDS 250mlHDPE-NoPres
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ARCADIS US - TX

2929 Briarpark Dr., Suite 300
Houston, TX 77042

Billing Information:
Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129

Report to:
Pam Krueger

Email To: pam.krueger@arcadis-us.com;maisha.turner@arcadis-

Project
Description: **Navajo Refining Company - Artesia, NM**

City/State
Collected:

Phone: **713-953-4800**
Fax:

Client Project #
TX000836.0008.00004

Lab Project #
ARCADHTX-NAVAJO

Collected by (print):
Ron Wood

Site/Facility ID #
BACKGROUND

P.O. #

Collected by (signature):
Ron Wood

Rush? (Lab MUST Be Notified)
____ Same Day200%
____ Next Day100%
____ Two Day50%
____ Three Day25%

Date Results Needed

Email? ____ No ☒ Yes
FAX? ____ No ____ Yes

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
EB-32-0615-B6	G	GW	—	6/2/15	1740	16
UG-3R-0615-B6	G	GW	—	6/3/15	0830	16
UG-1-0615-B6	G	GW	—	6/3/15	0930	16
UG-2-0615-B6	G	GW	—	6/3/15	1025	16
EB-33-0615-B6	C	GW	—	6/3/15	1045	16
		GW				16

X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X

11
12
13
14
15
16

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

Remarks: **6320 8705 3980**
Please ensure 5 day TAT is met
6320 8705 4004

6320 8705 3957 pH **6320 8705 3968** Temp **6320 8705 3990**

Relinquished by: (Signature)

Date: **6/3/15**
Time: **1245**

Received by: (Signature)

Samples returned via: ☐ UPS
☒ FedEx ☐ Courier ☐ _____

Condition: (lab use only)
OK *GOS*

Relinquished by: (Signature)

Date: _____
Time: _____

Received by: (Signature)

Temp: **36** °C Bottles Received: **241**

COC Seal Intact: ☒ Y ☐ N ☐ NA

Relinquished by: (Signature)

Date: _____
Time: _____

Received for lab by: (Signature)

Date: **6/4/15** Time: **0900**

pH Checked: **62, 712** NCF: _____

ARCADIS US - TX

2929 Briarpark Dr., Suite 300
Houston, TX 77042

Billing Information:

Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129Report to:
Pam KruegerEmail To: pam.krueger@arcadis-
us.com;maisha.turner@arcadis-

Project

Description: Navajo Refining Company - Artesia, NM

City/State
Collected:

Phone: 713-953-4800

Fax:

Client Project #

TX000836.0008.00004

Lab Project #

ARCADHTX-NAVAJO

Collected by (print):

Ron Wood

Site/Facility ID #

BACKGROUND

P.O. #

Collected by (signature):

[Signature]

Rush? (Lab MUST Be Notified)

Same Day200%

Next Day100%

Two Day50%

Three Day25%

Date Results Needed

Email? ___ No ___ X ___ Yes

FAX? ___ No ___ Yes

No.
of
Cntrs

Immediately

Packed on Ice N ___ Y ___

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

No.
of
Cntrs

EB-32-0615-BG

G

GW

—

6/2/15

1740

16

X

UG-3R-0615-BG

G

GW

—

6/3/15

6830

16

X

UG-1-0615-BG

G

GW

—

6/3/15

0930

16

X

UG-2-0615-BG

G

GW

—

6/3/15

1025

16

X

EB-33-0615-BG

G

GW

—

6/3/15

1045

16

X

Trip Blank

—

GW

—

—

—

16

X

Analysis / Container / Preservative

Chain of Custody

Page 2 of 4

ESC
L.A.B S.C.I.E.N.C.E.S

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L #

L768982

Table #

Acctnum: ARCADHTX

Template: T102918

Prelogin: P511077

TSR: 633 - Pam Langford

PB:

526156

Shipped Via: FedEx Ground

Rem./Contaminant

Sample # (lab only)

11

12

13

14

15

+RV

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

Remarks:

6320 8705 3980 6320 8705 4004 6320 8705 3957 6320 8705 3698 6320 8705 3990
Please ensure 5 day TAT is met 6320 8705 3979

Relinquished by: (Signature)

[Signature]

Date:

6/3/15

Time:

1245

Received by: (Signature)

[Signature]

Samples returned via: ☐ UPS☒ FedEx ☐ Courier ☐ Other

Hold #

Condition: (lab use only)

GDS

Relinquished by: (Signature)

[Signature]

Date:

Time:

Received by: (Signature)

[Signature]

Temp: °C Bottles Received:

3.6 241

COC Seal Intact: ☒ Y ☐ N ☐ NA

pH Checked:

NCF:

Relinquished by: (Signature)

[Signature]

Date:

Time:

Received for lab by: (Signature)

[Signature]

Date:

6/4/15

Time:

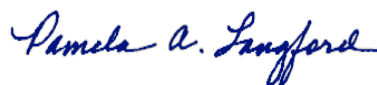
0900

July 10, 2015

ARCADIS US - TX

Sample Delivery Group: L768990
Samples Received: 06/04/2015
Project Number: TX000836.0008.00004
Description: Navajo Refining Company - Artesia, NM
Site: BACKGROUND
Report To: Pam Krueger
2929 Briarpark Dr., Suite 300
Houston, TX 77042

Entire Report Reviewed By:



Pam Langford

Pam Langford

Technical Service Representative

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



¹ Cp: Cover Page	1
² Tc: Table of Contents	2
³ Cn: Case Narrative	3
⁴ Gl: Glossary of Terms	4
⁵ Al: Accreditations & Locations	5
⁶ Sc: Chain of Custody	6

¹ Cp
² Tc
³ Cn
⁴ Gl
⁵ Al
⁶ Sc



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

Pam Langford

Pam Langford
Technical Service Representative

¹ Cp

² Tc

³ Cn

⁴ Gl

⁵ Al

⁶ Sc

Project Narrative

L768990 -01, -02, -03, -04, -05, -06, -07, -08, -09, -10, -11, -12, -13, -14, -15 contains subout data that is included after the chain of custody.



Abbreviations and Definitions

SDG	Sample Delivery Group.
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Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
-----------	-------------

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

¹Cp

²Tc

³Cn

⁴Gl

⁵Al

⁶Sc



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

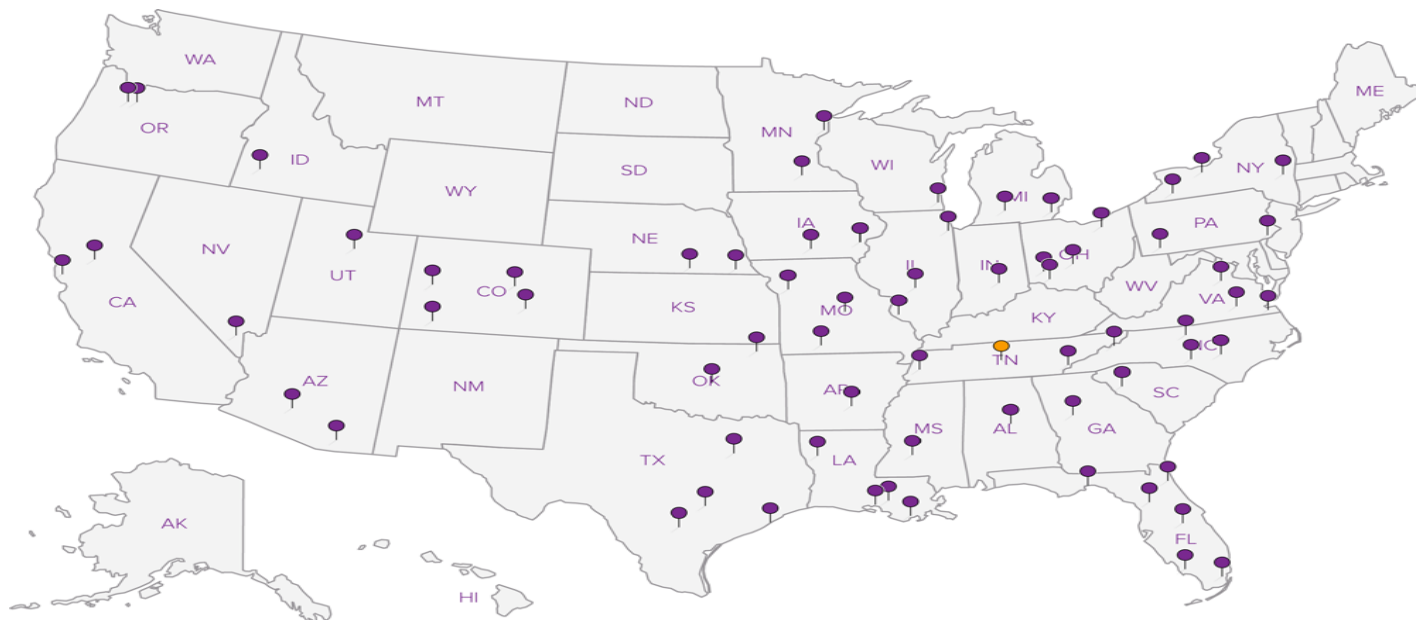
¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA–Crypto	TN00003	USDA	S-67674

Our Locations

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



ARCADIS US - TX

2929 Briarpark Dr., Suite 300
Houston, TX 77042

Billing Information:

Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129

Report to:
Pam Krueger:

Email To: pam.krueger@arcadis-
us.com;maisha.turner@arcadis-

Project:
Description: Navajo Refining Company - Artesia, NM

City/State
Collected:

Phone: 713-953-4800
Fax:

Client Project #
TX000836.0008.00004

Lab Project #
ARCADHTX-NAVAJO

Collected by (print):

Site/Facility ID #
BACKGROUND

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Date Results Needed

Immediately
Packed on Ice N ☐ Y ☒

Same Day 200%
Next Day 100%
Two Day 50%
Three Day 25%

Email? ☐ No ☒ Yes
FAX? ☐ No ☐ Yes

No.
of
Cntrs

Analysis / Container / Preservative

CL, FL, SO4 125mlHDPE-NoPres

CN 250mlHDPEAmb-NaOH ²

DROOROLVI 40mlAmb-HCl-BT

GRO 40mlAmb HCl

NAVAJO METALS, DIS 500mlHDPE-HNO3 ²

NAVAJO METALS, TOT 500mlHDPE-HNO3 ²

NO2NO3 250mlHDPE-H2SO4 ²

RA226, RA228 1L-HDPE-Add HNO3 ²

SV8270 100ml Amb NoPres

TDS 250mlHDPE-NoPres



YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-756-5454
Phone: 800-767-5454
Fax: 615-756-5850

L# L768982 N

Table # L768990

Acctnum: ARCADHTX

Template: T102918

Prelimin: P511077

TSR: 633 - Pam Langford

PB: 5-26-15

Shipped Via: FedEX Ground

Rem./Contaminant Sample # (lab only)

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CL, FL, SO4 125mlHDPE-NoPres	CN 250mlHDPEAmb-NaOH ²	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	NAVAJO METALS, DIS 500mlHDPE-HNO3 ²	NAVAJO METALS, TOT 500mlHDPE-HNO3 ²	NO2NO3 250mlHDPE-H2SO4 ²	RA226, RA228 1L-HDPE-Add HNO3 ²	SV8270 100ml Amb NoPres	TDS 250mlHDPE-NoPres	Rem./Contaminant	Sample # (lab only)
MW-13-0615-BG	G	GW	—	6/1/15	1520	16	X	X	X	X	X	X	X	X	X	X		-01
MW-12-0615-BG	G	GW	—	6/1/15	1630	16	X	X	X	X	X	X	X	X	X	X		02
EB-31-0615-BG	G	GW	—	6/1/15	1740	19	X	X	X	X	X	X	X	X	X	X		03
MW-25-0615-BG	G	GW	—	6/2/15	0900	16	X	X	X	X	X	X	X	X	X	X		04
MW-17-0615-BG	G	GW	—	6/2/15	1030	16	X	X	X	X	X	X	X	X	X	X		05
NP-5-0615-BG	G	GW	—	6/2/15	1150	16	X	X	X	X	X	X	X	X	X	X		06
MW-136-0615-BG	G	GW	—	6/2/15	1330	16	X	X	X	X	X	X	X	X	X	X		07
MW-55-0615-BG *	G	GW	—	6/2/15	1450	16	X	X	X	X	X	X	X	X	X	X		08
UG-4-0615-BG	G	GW	—	6/2/15	1630	16	X	X	X	X	X	X	X	X	X	X		09
DUP-12-0615-BG	G	GW	—	—	—	16	X	X	X	X	X	X	X	X	X	X		10

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

Remarks:

6320 8705 3980 6320 8705 3980 6320 8705 3980
Please ensure 5 day TAT is met 6320 8705 3972

pH 6.320 Temp 8705 3968

Flow 6320 Other 8705 3990

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Samples returned via: ☐ UPS

Hold #

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

☒ FedEx ☐ Courier ☐ Other

Condition: (lab use only)

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Temp: °C Bottles Received:

X adj in lab w/25ml conc

H2SO4 @ 1033

COC Seal Intact: ☒ Y ☐ N ☐ NA

Date: 6/4/15 Time: 0900

pH Checked: 42, >12 NCF:

ARCADIS US - TX

2929 Briarpark Dr., Suite 300
Houston, TX 77042

Billing Information:

Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129

Report to:
Pam Krueger

Email To: pam.krueger@arcadis-us.com;maisha.turner@arcadis-

Project:
Description: Navajo Refining Company - Artesia, NM

City/State
Collected:

Phone: 713-953-4800
Fax:

Client Project #
TX000836.0008.00004

Lab Project #
ARCADHTX-NAVAJO

Collected by (print):

Ron Wood

Site/Facility ID #
BACKGROUND

P.O. #

Collected by (signature):

Tim Wood

Rush? (Lab MUST Be Notified)

Same Day 200%
Next Day 100%
Two Day 50%
Three Day 25%

Date Results Needed

Email? No X Yes

FAX? No Yes

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	V8260 40mlAmb-HCl	Analysis / Container / Preservative	Chain of Custody
MU-13-0615-BG	G	GW	—	6/1/15	1520	16	X		
MW-12-0615-BG	G	GW	—	6/1/15	1630	16	X		
ER-B1-0615-BG	G	GW	—	6/1/15	1740	16	X		
MW-25-0615-BG	G	GW	—	6/2/15	0900	16	X		
MW-17-0615-BG	G	GW	—	6/2/15	1030	16	X		
NP-5-0615-BG	G	GW	—	6/2/15	1150	16	X		
MW-136-0615-BG	G	GW	—	6/2/15	1330	16	X		
MW-55-0615-BG	G	GW	—	6/2/15	1450	16	X		
UG-4-0615-BG	G	GW	—	6/2/15	1630	16	X		
DWP-12-0615-BG	G	GW	—	—	—	16	X		

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

Remarks:

Please ensure 5 day TAT is met

Relinquished by: (Signature)

Tim Wood

Date:

6/3/15

Time:

1245

Received by: (Signature)

[Signature]

Samples returned via: ☐ UPS

☒ FedEx ☐ Courier ☐ Other

Temp: °C

3.6 24/

Bottles Received:

6/4/15 0900

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

[Signature]

Date:

6/4/15 0900

Condition: (lab use only)

605

COC Seal Intact: ☒ Y ☐ N ☐ NA

pH Checked:

NCF:

Chain of Custody Page 1 of 4



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5858
Fax: 615-758-5859



L# 1768982

K034

1768990

Acctnum: ARCADHTX

Template T102918

Prelogin: P511077

TSR: 633 - Pam Langford

PB: 5-26-156

Shipped Via: FedEx Ground

Item / Contaminant Sample # (lab only)

- 61

02

03

04

05

06

07

08

09

10

6320 8705 3980 6320 8705 3987 6320 8705 3979

pH Temp

Flow Other

Hold #

ARCADIS US - TX

2929 Briarpark Dr., Suite 300
Houston, TX 77042

Report to:
Pam Krueger

Project
Description: Navajo Refining Company - Artesia, NM

Phone: 713-953-4800
Fax:

Collected by (print):

Collected by (signature):

Immediately
Packed on Ice: N ☒ Y ☒

Billing Information:

Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129

Email To: pam.krueger@arcadis-
us.com;maisha.turner@arcadis-

City/State
Collected:

Lab Project #
ARCADHTX-NAVAJO

P.O. #

Date Results Needed

Email? ☐ No ☒ Yes

FAX? ☐ No ☐ Yes

No.
of
Cntrs

Analysis / Container / Preservative

CL, FL, SO4 125mlHDPE-NoPres	CN 250mlHDPEAmb-NaOH	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	NAVAJO METALS, DIS 500mlHDPE-HNO3	NAVAJO METALS, TOT 500mlHDPE-HNO3	NO2NO3 250mlHDPE-H2SO4	RA226, RA228 1L-HDPE-Add HNO3	SVB270 100ml Amb NoPres	TDS 250mlHDPE-NoPres
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Chain of Custody Page 4 of 4



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# 1768982

Table # 1768990

Acctnum: ARCADHTX

Template: T102918

Prelogin: P511077

TSR: 633 - Pam Langford

PB: 526-156

Shipped Via: FedEx Ground

Rem./Contaminant Sample # (lab only)

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	CL, FL, SO4 125mlHDPE-NoPres	CN 250mlHDPEAmb-NaOH	DROOROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	NAVAJO METALS, DIS 500mlHDPE-HNO3	NAVAJO METALS, TOT 500mlHDPE-HNO3	NO2NO3 250mlHDPE-H2SO4	RA226, RA228 1L-HDPE-Add HNO3	SVB270 100ml Amb NoPres	TDS 250mlHDPE-NoPres	Rem./Contaminant	Sample # (lab only)
EB-32-0615-B6	G	GW	—	6/2/15	1740	16	X	X	X	X	X	X	X	X	X	X		-11
UG-3R-0615-B6	G	GW	—	6/3/15	0830	16	X	X	X	X	X	X	X	X	X	X		12
UG-1-0615-B6	G	GW	—	6/3/15	0930	16	X	X	X	X	X	X	X	X	X	X		13
UG-2-0615-B6	G	GW	—	6/3/15	1025	16	X	X	X	X	X	X	X	X	X	X		14
EB-33-0615-B6	G	GW	—	6/3/15	1045	16	X	X	X	X	X	X	X	X	X	X		15
		GW				16	X	X	X	X	X	X	X	X	X	X		

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

Remarks: Please ensure 5 day TAT is met
6320 8705 3980 6320 8705 3957 6320 8705 3968 6320 8705 3990 6320 8705 4004 6320 8705 3971

Relinquished by: (Signature)	Date: 6/3/15	Time: 1245	Received by: (Signature)	Samples returned via: ☒ UPS ☐ FedEx ☐ Courier ☐	Hold #
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 36 °C Bottles Received: 241	Condition: (lab use only) 605
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6/4/15 Time: 0900	COC Seal Intact: ☒ Y ☐ N ☐ NA
					pH Checked: 62, 712 NCF:

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	E87775
Arizona	AZ0432	Nevada	IN000352015-1
Arkansas	IN035	New Hampshire*	2124
California	2920	New Mexico	IN00035
Colorado	IN035	New Jersey*	IN598
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida (Primary AB)*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon*	IN200001
Idaho	IN00035/E87775	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	200001	Rhode Island	LAO00241
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-14-7
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA150003	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	00127
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

110 South Hill Street
 South Bend, IN 46617
 Tel: (574) 233-4777
 Fax: (574) 233-8207
 1 800 332 4345

Laboratory Report

Client: Environmental Science

Attn: Janice Cozby
 12065 Lebanon Road
 Mount Juliet, TN 37122

Report: 341553
 Priority: Standard Written
 Status: Final
 PWS ID: Not Supplied

Copies
 to: Autumn Fetty

Sample Information					
EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
3255679	L768990-01	7500-Ra B	06/01/15 15:20	Client	06/05/15 09:15
3255679	L768990-01	7500-Ra D	06/01/15 15:20	Client	06/05/15 09:15
3255680	L768990-02	7500-Ra B	06/01/15 16:30	Client	06/05/15 09:15
3255680	L768990-02	7500-Ra D	06/01/15 16:30	Client	06/05/15 09:15
3255681	L768990-03	7500-Ra B	06/01/15 17:40	Client	06/05/15 09:15
3255681	L768990-03	7500-Ra D	06/01/15 17:40	Client	06/05/15 09:15
3255682	L768990-04	7500-Ra B	06/02/15 09:00	Client	06/05/15 09:15
3255682	L768990-04	7500-Ra D	06/02/15 09:00	Client	06/05/15 09:15
3255683	L768990-05	7500-Ra B	06/02/15 10:30	Client	06/05/15 09:15
3255683	L768990-05	7500-Ra D	06/02/15 10:30	Client	06/05/15 09:15
3255684	L768990-06	7500-Ra B	06/02/15 11:50	Client	06/05/15 09:15
3255684	L768990-06	7500-Ra D	06/02/15 11:50	Client	06/05/15 09:15
3255685	L768990-07	7500-Ra B	06/02/15 13:30	Client	06/05/15 09:15
3255685	L768990-07	7500-Ra D	06/02/15 13:30	Client	06/05/15 09:15
3255686	L768990-08	7500-Ra B	06/02/15 14:50	Client	06/05/15 09:15
3255686	L768990-08	7500-Ra D	06/02/15 14:50	Client	06/05/15 09:15
3255687	L768990-09	7500-Ra B	06/02/15 16:30	Client	06/05/15 09:15
3255687	L768990-09	7500-Ra D	06/02/15 16:30	Client	06/05/15 09:15
3255688	L768990-10	7500-Ra B	06/02/15 00:00	Client	06/05/15 09:15
3255688	L768990-10	7500-Ra D	06/02/15 00:00	Client	06/05/15 09:15
3255689	L768990-11	7500-Ra B	06/02/15 17:40	Client	06/05/15 09:15
3255689	L768990-11	7500-Ra D	06/02/15 17:40	Client	06/05/15 09:15
3255690	L768990-12	7500-Ra B	06/03/15 08:30	Client	06/05/15 09:15
3255690	L768990-12	7500-Ra D	06/03/15 08:30	Client	06/05/15 09:15
3255691	L768990-13	7500-Ra B	06/03/15 09:30	Client	06/05/15 09:15
3255691	L768990-13	7500-Ra D	06/03/15 09:30	Client	06/05/15 09:15
3255692	L768990-14	7500-Ra B	06/03/15 10:25	Client	06/05/15 09:15
3255692	L768990-14	7500-Ra D	06/03/15 10:25	Client	06/05/15 09:15
3255693	L768990-15	7500-Ra B	06/03/15 10:45	Client	06/05/15 09:15
3255693	L768990-15	7500-Ra D	06/03/15 10:45	Client	06/05/15 09:15

Report Summary

Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Kelly Trott at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Kelly Trott Analytical Services Manager

Authorized Signature

Title

07/10/2015

Date

Client Name: Environmental Science

Report #: 341553

Sampling Point: L768990-01

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.25	1.0	0.72 ± 0.34	pCi/L	06/17/15 17:40	06/22/15 16:19	3255679
15262-20-1	Radium-228	7500-Ra D	---	0.88	1.0	0.56 ± 0.86	pCi/L	06/17/15 17:30	07/01/15 09:42	3255679
---	Combined Radium	calc.	5 *	0.88	1.0	1.28 ± 0.92	pCi/L	06/17/15 17:40	07/01/15 09:42	3255679

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-02

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.30	1.0	0.25 ± 0.29	pCi/L	06/17/15 17:40	06/22/15 16:19	3255680
15262-20-1	Radium-228	7500-Ra D	---	0.5	1.0	1.0 ± 0.5	pCi/L	06/17/15 17:30	07/01/15 09:42	3255680
---	Combined Radium	calc.	5 *	0.5	1.0	1.25 ± 0.58	pCi/L	06/17/15 17:40	07/01/15 09:42	3255680

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-03

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.31	1.0	0.50 ± 0.34	pCi/L	06/17/15 17:40	06/22/15 16:19	3255681
15262-20-1	Radium-228	7500-Ra D	---	0.6	1.0	1.2 ± 0.6	pCi/L	06/17/15 17:30	07/01/15 09:42	3255681
---	Combined Radium	calc.	5 *	0.6	1.0	1.70 ± 0.70	pCi/L	06/17/15 17:40	07/01/15 09:42	3255681

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-04

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.31	1.0	0.67 ± 0.38	pCi/L	06/17/15 17:40	06/22/15 16:19	3255682
15262-20-1	Radium-228	7500-Ra D	---	0.72	1.0	-0.20 ± 0.67	pCi/L	06/17/15 17:30	07/01/15 09:42	3255682
---	Combined Radium	calc.	5 *	0.72	1.0	0.47 ± 0.77	pCi/L	06/17/15 17:40	07/01/15 09:42	3255682

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-05

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.31	1.00	0.02 ± 0.26	pCi/L	06/17/15 17:40	06/22/15 16:19	3255683
15262-20-1	Radium-228	7500-Ra D	---	0.6	1.0	1.2 ± 0.6	pCi/L	06/17/15 17:30	07/01/15 09:42	3255683
---	Combined Radium	calc.	5 *	0.6	1.00	1.22 ± 0.64	pCi/L	06/17/15 17:40	07/01/15 09:42	3255683

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-06

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.23	1.0	0.27 ± 0.24	pCi/L	06/17/15 17:40	06/22/15 16:19	3255684
15262-20-1	Radium-228	7500-Ra D	---	0.8	1.0	1.6 ± 0.8	pCi/L	06/17/15 17:30	07/01/15 09:42	3255684
---	Combined Radium	calc.	5 *	0.8	1.0	1.87 ± 0.86	pCi/L	06/17/15 17:40	07/01/15 09:42	3255684

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-07

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.21	1.0	0.56 ± 0.28	pCi/L	06/17/15 17:40	06/22/15 16:19	3255685
15262-20-1	Radium-228	7500-Ra D	---	0.82	1.0	0.98 ± 0.83	pCi/L	06/17/15 17:30	07/01/15 09:42	3255685
---	Combined Radium	calc.	5 *	0.82	1.0	1.54 ± 0.88	pCi/L	06/17/15 17:40	07/01/15 09:42	3255685

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-08

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.25	1.0	0.57 ± 0.31	pCi/L	06/17/15 17:40	06/22/15 16:19	3255686
15262-20-1	Radium-228	7500-Ra D	---	0.6	1.0	1.3 ± 0.6	pCi/L	06/17/15 17:30	07/01/15 09:42	3255686
---	Combined Radium	calc.	5 *	0.6	1.0	1.87 ± 0.67	pCi/L	06/17/15 17:40	07/01/15 09:42	3255686

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-09

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.28	1.0	0.73 ± 0.35	pCi/L	06/17/15 19:45	06/22/15 18:17	3255687
15262-20-1	Radium-228	7500-Ra D	---	0.6	1.0	1.4 ± 0.7	pCi/L	06/17/15 17:30	06/30/15 17:59	3255687
---	Combined Radium	calc.	5 *	0.6	1.0	2.13 ± 0.78	pCi/L	06/17/15 19:45	06/30/15 17:59	3255687

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-10

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.33	1.0	0.19 ± 0.30	pCi/L	06/17/15 19:45	06/22/15 18:17	3255688
15262-20-1	Radium-228	7500-Ra D	---	0.77	1.0	-0.21 ± 0.72	pCi/L	06/17/15 17:30	06/30/15 17:59	3255688
---	Combined Radium	calc.	5 *	0.77	1.0	-0.02 ± 0.78	pCi/L	06/17/15 19:45	06/30/15 17:59	3255688

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-11

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.26	1.0	0.62 ± 0.32	pCi/L	06/17/15 19:45	06/22/15 18:17	3255689
15262-20-1	Radium-228	7500-Ra D	---	0.67	1.0	0.46 ± 0.66	pCi/L	06/17/15 17:30	06/30/15 17:59	3255689
---	Combined Radium	calc.	5 *	0.67	1.0	1.08 ± 0.73	pCi/L	06/17/15 19:45	06/30/15 17:59	3255689

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-12

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.20	1.0	0.70 ± 0.30	pCi/L	06/17/15 19:45	06/22/15 18:17	3255690
15262-20-1	Radium-228	7500-Ra D	---	0.7	1.0	1.9 ± 0.8	pCi/L	06/17/15 17:30	06/30/15 17:59	3255690
---	Combined Radium	calc.	5 *	0.7	1.0	2.60 ± 0.84	pCi/L	06/17/15 19:45	06/30/15 17:59	3255690

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-13

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.23	1.0	0.63 ± 0.30	pCi/L	06/17/15 19:45	06/22/15 18:17	3255691
15262-20-1	Radium-228	7500-Ra D	---	0.73	1.0	0.91 ± 0.74	pCi/L	06/17/15 17:30	06/30/15 17:59	3255691
---	Combined Radium	calc.	5 *	0.73	1.0	1.54 ± 0.80	pCi/L	06/17/15 19:45	06/30/15 17:59	3255691

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-14

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.31	1.0	0.52 ± 0.34	pCi/L	06/17/15 19:45	06/22/15 18:17	3255692
15262-20-1	Radium-228	7500-Ra D	---	0.66	1.0	0.84 ± 0.67	pCi/L	06/17/15 17:30	06/30/15 17:59	3255692
---	Combined Radium	calc.	5 *	0.66	1.0	1.36 ± 0.75	pCi/L	06/17/15 19:45	06/30/15 17:59	3255692

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

Sampling Point: L768990-15

PWS ID: Not Supplied

Radionuclides										
Analyte ID #	Analyte	Method	Reg Limit	MDA 95**	MRL	Result	Units	Preparation Date	Analyzed	EEA ID #
13982-63-3	Radium-226	7500-Ra B	---	0.24	1.0	0.78 ± 0.34	pCi/L	06/17/15 19:45	06/22/15 18:17	3255693
15262-20-1	Radium-228	7500-Ra D	---	0.97	1.0	0.70 ± 0.96	pCi/L	06/17/15 17:30	06/30/15 17:59	3255693
---	Combined Radium	calc.	5 *	0.97	1.0	1.48 ± 1.02	pCi/L	06/17/15 19:45	06/30/15 17:59	3255693

** Minimum Detectable Activity (MDA95) shall be that concentration which can be counted with a precision of plus or minus 100% at the 95 % confidence level.

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

Sub-Contract Chain of Custody

Environmental Science Corp.
12065 Lebanon Road
Mt. Juliet, TN 37122
(615) 773-9756 (615) 758-5859 fa

278082

341553

Sub-Contract Lab : ENVHEALT

City / State : South Bend, IN

Results Needed by : 07/05/2015

ESC Purchase Order # : S22066

WORKGROUP WG793528

Date Created : 06/04/2015

Send Reports To : Janice Cozby jcozby@esclabsciences.com

SAMPLENO Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L768990-01	DW	06/01/2015 1520	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639818						
L768990-01	DW	06/01/2015 1520	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639818						
L768990-02	DW	06/01/2015 1630	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639819						
L768990-02	DW	06/01/2015 1630	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639819						
L768990-03	DW	06/01/2015 1740	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639820						
L768990-03	DW	06/01/2015 1740	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639820						
L768990-04	DW	06/02/2015 0900	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639821						
L768990-04	DW	06/02/2015 0900	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639821						
L768990-05	DW	06/02/2015 1030	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639822						
L768990-05	DW	06/02/2015 1030	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639822						
L768990-06	DW	06/02/2015 1150	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639823						
L768990-06	DW	06/02/2015 1150	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639823						

Relinquished by

Date:

Received by : K Depew

Date: 6-5-15 0915

Relinquished by

Date:

Received by :

Date:

Page : 1



Sub-Contract Lab : ENVHEALT
 City / State : South Bend, IN
 Results Needed by : 07/05/2015
 ESC Purchase Order # : S22066

WORKGROUP **WG793528**

Date Created : 06/04/2015

Send Reports To : Janice Cozby jcozby@esclabsciences.com

SAMPLENO Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L768990-07	DW	06/02/2015 1330	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639824					3255685	
L768990-07	DW	06/02/2015 1330	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639824						
L768990-08	DW	06/02/2015 1450	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639825					3255686	
L768990-08	DW	06/02/2015 1450	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639825						
L768990-09	DW	06/02/2015 1630	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639826					3255687	
L768990-09	DW	06/02/2015 1630	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639826						
L768990-10	DW	06/02/2015 0000	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639827					3255688	
L768990-10	DW	06/02/2015 0000	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639827						
L768990-11	DW	06/02/2015 1740	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639828					3255689	
L768990-11	DW	06/02/2015 1740	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639828						
L768990-12	DW	06/03/2015 0830	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639829					3255690	
L768990-12	DW	06/03/2015 0830	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639829						
L768990-13	DW	06/03/2015 0930	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639830					3255691	

Relinquished by _____ Date: _____
 Received by : K Deppa Date: 6-5-15 0915
 Relinquished by _____ Date: _____
 Received by : _____ Date: _____

Page : 2



Sub-Contract Lab : ENVHEALT
City / State : South Bend, IN
Results Needed by : 07/05/2015
ESC Purchase Order # : S22066

WORKGROUP **WG793528**

Date Created : 06/04/2015

Send Reports To : Janice Cozby jcozby@esclabsciences.com

SAMPLENO Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L768990-13	DW	06/03/2015 0930	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639830						
L768990-14	DW	06/03/2015 1025	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639831						
L768990-14	DW	06/03/2015 1025	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639831						
L768990-15	DW	06/03/2015 1045	Radium 226	RA226	7500Ra B-2001	NM Client Special EDD
18639832						
L768990-15	DW	06/03/2015 1045	Radium 228	RA228	7500Ra D-2001	NM Client Special EDD
18639832						

Wet in
①
Client Provided Sample Container

all Bottles have a pH<2

Relinquished by _____ Date: _____

Received by : K. Dwyer Date: 6-15-15 0915

Relinquished by _____ Date: _____

Received by : _____ Date: _____

Page : 3



[illegible]

ARCADIS US - TX
2929 Briarpark Dr., Suite 300
Houston, TX 77042

Report to:
Pam Krueger

Project:
Description: Navajo Refining Company - Artesia, NM

Phone: 713-953-4800
Fax: TX000836.0008.00004

Collected by (print): Ron Wood
Collected by (signature): *Ron Wood*

Immediately Packed on Ice: N Y

Billing Information:
Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129

Email To: pam.krueger@arcadis-us.com
us.com/malisha.turner@arcadis-

City/State:
Collected:

Lab Project #:
ARCADHTX-NAVAJO

P.O. #:

Site/Facility ID #:
BACKGROUND

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

Date Results Needed:

Email? No ☒ Yes
FAX? No ☐ Yes

ESC
L.A.B. S.C.I.E.N.C.E.S.
27005 Lakewood Bl
Houston, TX 77122
Phone: 613-758-5858
Phone: 800-767-5858
Fax: 613-758-5859

Lab #: 27684822
K034
1768990
Account: ARCADHTX
Template: T102918
Protocol: P511077
TSR: 033 - Pam Langford
PB: 5-26-15
Shipped Via: FedEx Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Enter	Flow	Temp	Condition	Hold #
MU-13-0615-B6	G	GW	—	6/1/15	1520	16	X	3968	6320 8705 3968	6320 8705 3990
MU-12-0615-B6	G	GW	—	6/1/15	1630	16	X			
ES-B1-0615-B6	G	GW	—	6/1/15	1740	16	X			
MU-25-0615-B6	G	GW	—	6/2/15	0900	16	X			
MU-17-0615-B6	G	GW	—	6/2/15	1030	16	X			
NP 5-0615-B6	G	GW	—	6/2/15	1150	16	X			
MU-136-0615-B6	G	GW	—	6/2/15	1330	16	X			
MU-55-0615-B6	G	GW	—	6/2/15	1450	16	X			
UG-4-0615-B6	G	GW	—	6/2/15	1630	16	X			
DUP-12-0615-B6	G	GW	—	—	—	16	X			

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

Remarks: Please ensure 5 day TAT is met. 6320 8705 3980 6320 8705 3979

Relinquished by (Signature): *Pam Krueger* **Date:** 6/3/15 **Time:** 1245

Relinquished by (Signature): *He no with* **Date:** 6/4/15 **Time:** 0900

Relinquished by (Signature): **Date:** **Time:**

Samples returned via: ☒ FedEx ☐ Counter ☐ UPS

Temp: 3.4 °C **Bottles Received:** 24/

Date: 6/4/15 **Time:** 0900

COC Seal Intact: ☒ **NCF:** ☒

ARCADIS US - TX

2929 Briarpark Dr., Suite 300
Houston, TX 77042

Attn: Accounts Payable
630 Plaza Drive, Suite 600
Highlands Ranch, CO 80129

Billing Information:

Report to:
Pam Krueger

Email to: pam.krueger@arcadis-us.com
amsha.turner@arcadis-us.com

Project: Navajo Refining Company - Artesia, NM

Phone: 713-953-4800

Client Project #
TX000836.0008.00004

Lab Project #
ARCAOHTX-NAVAJO

Fax:

Collected by (print):
Ken Lund

Site/Activity ID #
BACKGROUND

P.O. #

Collected by (signature):
Ken Lund

Rush? (Lab MUST be notified)

Date Results Needed

Immediately
Packed on Ice N ✓ V

Same Day
Next Day
Two Day
Three Day

Emergency? No X Yes
FAX? No ✓ Yes

No. of Cans

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

EB-32-0615-B6

G

GW

6/2/15 1740

16

UG-3R-0615-B6

G

GW

6/3/15 0830

16

UG-1-0615-B6

G

GW

6/3/15 0930

16

UG-2-0615-B6

G

GW

6/3/15 1025

16

EB-33-0615-B6

C

GW

6/3/15 1045

16

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

Remarks: Please review S&B

6/3/15

1245

Received by (Signature):
Pam Krueger

Date:

Relinquished by (Signature):
Pam Krueger

Date:

Time:

Received by (Signature):
Pam Krueger

Date:

Relinquished by (Signature):
Pam Krueger

Date:

Time:

Received by (Signature):
Pam Krueger

Date:

Relinquished by (Signature):
Pam Krueger

Date:

Time:

Received by (Signature):
Pam Krueger

Date:

Analysis / Container / Preservative

Chain of Custody

Page 4 of 4

RESO
L.A.B. S.C.I.E.N.C.E.S.

12000 Lehigh Ave
Houston, TX 77032
Phone: 281-754-5454
Fax: 281-754-5455

Table # 1768990
Attn: ARCAOHTX
Telephone: 713-953-4800
FAX: 713-953-4800

Prelogin: P511077
FBI: 633 - Pam Langford
PR: 561564

Shipped Via: FedEx Ground
Sample # (lab only)

Hold #
Condition: (lab use only)

COG Seal Intact: ✓
PH Checked: ✓

Temp: 34
Date: 6/4/15

Flow: ✓ FedEx ✓ Counter ✓
Other: ✓ UPS

Temp: 241
Date: 6/4/15

Temp: 900
Date: 6/4/15

Temp: 900
Date: 6/4/15

ARCADIS US - TX 2929 Briarpark Dr., Suite 300 Houston, TX 77042		ARCADIS US - TX Attn: Accounts Payable 630 Plaza Drive, Suite 600 Highlands Ranch, CO 80129		Billing Information: Email To: pam.krueger@arcadis-us.com Email From: maisha.turner@arcadis-us.com	
Report to: Pam Krueger		Project Description: Navajo Refining Company - Artesia, NM		City/State: ARCADHTX-NAVAJO	
Phone: 713-953-4800 Fax:		Client Project #: TX000836.0008.00004		Lab Project #: ARCADHTX-NAVAJO	
Collected by (print): R. Wood		Site/Facility ID #: BACKGROUND		P.O. #:	
Rush? (Lab MUST Be Notified) Same Day _____ 100% Next Day _____ 100% Two Day _____ 50% Three Day _____ 25%		Date Results Needed		Email? No ☒ Yes ☐ FAX? No ☐ Yes ☐	
Immediately Packed on Ice N ☐ Y ☒		Date		Time	
Sample ID		Matrix *		Depth	
FB-32-0615-BG		GW		1740	
WG-32-0615-BG		GW		16	
WG-1-0615-BG		GW		16	
WG-2-0615-BG		GW		16	
FB-33-0615-BG		GW		16	
Trip Blank		GW		16	

Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other 6320 8705 3980 6320 8705 4004 6320 8705 3979		Date: 6/3/15 Time: 1245	
Remarks: Please ensure 5 day TAT is met		Date: 6/3/15 Time: 1245	
Relinquished by: (Signature) <i>R. Wood</i>		Date: 6/3/15 Time: 1245	
Relinquished by: (Signature)		Date:	
Relinquished by: (Signature)		Date:	

Chain of Custody Page 1 of 1		Analysis / Container / Preservative	
YOUR LAB OF CHOICE 31005 Tellico Rd Murfreesboro, TN 37132 Phone: 615-258-8858 Phone: 800-787-8856 Fax: 615-258-8775		L.A.B. S.C.I.E.N.C.E.S.	
I.D. # 1768982N		Table # 1768990	
Account: ARCADHTX		Template: T102918	
Prelogin: P511077		FSR: 631 - Pam Langford	
PB: 5-26156		Shipped Via: FedEx Ground	
Run (Containers)		Sample & Lab Info	
11		11	
12		12	
13		13	
14		14	
15		15	
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65		65	



B.3

Data Validation Reports

DATA VALIDATION CHECKLIST**NAVAJO REFINERY
BG GW Evaluation**

ARCADIS, Inc.
3850 N. Causeway Blvd.
Suite 990
Metairie, LA 70002
Tel. (504) 832-4174
Fax. (504) 832-2145

Sample Team:	ARCADIS
Sample Matrix:	Water
Analytical Laboratory:	ESC
Laboratory Work Order No.:	L712971 and L712975
Lab Project Manager:	Pamela Langford
Analyses:	Radium, Chloride/Fluoride/Sulfate, Nitrate/Nitrite, TDS, Metals (total and dissolved), TPH, VOCs, SVOCs, DRO/ORO and Cyanide
QA Reporting Level:	ARCADIS, Level II

Environmental
Project:
Navajo Refinery

Project Number:
TX000836.0008.00003

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999), "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (July 2002), analytical method control criteria, the analytical laboratory Quality Assurance Control Limits, and professional judgment. National Functional Guidelines were used primarily to determine applicable qualification.

The data verification was performed at a Level II and included review of data package completeness, laboratory control samples and method blanks, matrix spike precision and accuracy, surrogate recoveries, and holding time compliance. Laboratory calculations were not verified. Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation. Field sampling documentation was not reviewed as a component of this validation.

Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The following samples were included in this data validation:

SDG Number	Sample ID	Sample Date	Parent Sample
L712971	MW-12	07/14/14	
L712971	MW-13	07/14/14	
L712971	MW-25	07/14/14	
L712971	MW-136	07/14/14	
L712971	UG-1	07/14/14	
L712971	UG-3R	07/14/14	
L712971	UG-2	07/14/14	
L712971	EB-02	07/14/14	
L712971	EB-03	07/14/14	
L712971	Trip Blank	07/14/14	
L712971	Trip Blank	07/14/14	
L712971	Trip Blank	07/14/14	
L712971	Trip Blank	07/14/14	

Note: The associated field samples exhibited high concentrations of target compounds. These detections in the equipment blank demonstrates that the clean procedure for these samples were outside the control limits. Since all the sample concentrations are relatively high, the associated field samples were not qualified as non-detect for these compounds if the sample concentrations were less than five times the blank value. The equipment blanks will not be included in this validation.

I. VOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks	X						X
C. Trip Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X	X			X	
8. MSD (%R)		X	X			X	
9. MS/MSD (RPD)		X	X			X	
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for VOCs by Method 8260B. Performance was acceptable, with the following exceptions and notes.

7-9. Sample MW-12 was used as the MS/MSD. The recoveries and RPDs were acceptable.

II. SEMIVOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks	X						X
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for SVOCs by Method 8270C. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

III. TOTAL PETROLEUM HYDROCARBONS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks	X						X
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for TPH by Method 8015. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

IV. RADIUM

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)	X						X
6. LCS/LCSD (RPD)	X						X
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Field/Lab Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed for radium by Methods 7500Ra. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

III. METALS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X		X	
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X	X			X	
8. MSD (%R)		X	X			X	
9. MS/MSD (RPD)		X	X			X	
10. Field/Lab Duplicate (RPD)	X						X
11. Serial Dilution (%D)		X		X	X		
12. Total vs. Dissolved		X		X	X		

COMMENTS: The samples were analyzed for metals by Methods 6020. Performance was acceptable, with the following exceptions and notes.

- 3A. Aluminum, boron, selenium, dissolved aluminum, dissolved calcium, dissolved potassium, dissolved selenium and dissolved silver were detected in the method blank. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values.
- 7-9. Sample MW-12 was used as the MS/MSD. The recoveries and RPDs were acceptable.
- 11. Sample MW-12 was used as the serial dilution. The %D for boron was above the control limit. All field samples were qualified as estimated for boron.
- 12. The total manganese result for MW-12 was less than the dissolved result and the difference was greater than 10%. The total and dissolved manganese result for this sample was qualified as estimated.

The total boron result for MW-136 was less than the dissolved result and the difference was greater than 10%. The total and dissolved boron result for this sample was qualified as estimated.

IV. GENERAL CHEMISTRY

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank	X						X
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X	X			X	
8. MSD (%R)		X	X			X	
9. MS/MSD (RPD)		X	X			X	
10. Field/Lab Duplicate (RPD)		X	X			X	

COMMENTS: The samples were analyzed by methods 353.2, 9056 and 2540C. Performance was acceptable, with the following exceptions and notes.

7-9. Sample MW-136 was used as the MS/MSD. The recoveries and RPDs were acceptable.

10. Samples EB-03 and MW-13 were used as laboratory duplicates. The RPDs were acceptable.

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.

UJ – Result is considered not detected but estimated due to QC deficiencies.

UB – Non-detect at the Reporting Limit or at the concentration reported if greater than the RL due to associated blank contamination.

R – Result is qualified as unusable, data point is rejected.

Explanation/Notes:

Sample ID	Parameter	Result	Units	Qualifier	Reason
MW-12	Manganese (T)	87.0	ug/L	J	Total vs. Dissolved %D
	Manganese (D)	130.0	ug/L	J	Total vs. Dissolved %D
	Aluminum (T)	<50.0	ug/L	UB	Blank Contamination
	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Selenium (T)	10.0	ug/L	UB	Blank Contamination
	Boron (T)	560.0	ug/L	J	Serial Dilution %D
MW-136	Boron (T)	540.0	ug/L	J	Total vs. Dissolved %D and Serial Dilution %D
	Boron (D)	720.0	ug/L	J	Total vs. Dissolved %D
	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Selenium (T)	3.7	ug/L	UB	Blank Contamination
	Selenium (D)	4.5	ug/L	UB	Blank Contamination
MW-13	Aluminum (T)	<50.0	ug/L	UB	Blank Contamination
	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Boron (T)	640.0	ug/L	J	Total vs. Dissolved %D
	Selenium (T)	<2.0	ug/L	UB	Blank Contamination
	Selenium (D)	<2.0	ug/L	UB	Blank Contamination
MW-25	Aluminum (T)	<50.0	ug/L	UB	Blank Contamination
	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Boron (T)	220.0	ug/L	J	Total vs. Dissolved %D
	Selenium (T)	6.7	ug/L	UB	Blank Contamination
	Selenium (D)	5.6	ug/L	UB	Blank Contamination
UG-1	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Boron (T)	460.0	ug/L	J	
	Selenium (T)	6.0	ug/L	UB	Blank Contamination
	Selenium (D)	5.2	ug/L	UB	Blank Contamination
UG-3R	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Boron (T)	330.0	ug/L	J	
	Selenium (T)	3.2	ug/L	UB	Blank Contamination
	Selenium (D)	3.1	ug/L	UB	Blank Contamination
UG-2	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Boron (T)	380.0	ug/L	J	
	Selenium (T)	<2.0	ug/L	UB	Blank Contamination
	Selenium (D)	2.4	ug/L	UB	Blank Contamination
EB-02	Boron (T)	50.0	ug/L	J	
EB-03	Boron (T)	77.0	ug/L	J	

VALIDATION PERFORMED BY:

SIGNATURE: Rachelle Borne

DATE: April 21, 2015

PEER REVIEW:



DATE: April 22, 2015

DATA VALIDATION CHECKLIST**NAVAJO REFINERY
BG GW Eval**

ARCADIS, Inc.
3850 N. Causeway Blvd.
Suite 990
Metairie, LA 70002
Tel. (504) 832-4174
Fax. (504) 832-2145

Sample Team:	ARCADIS
Sample Matrix:	Water
Analytical Laboratory:	ESC
Laboratory Work Order No.:	L720999 and L721001
Lab Project Manager:	Pamela Langford
Analyses:	Radium, Chloride/Fluoride/Sulfate, Nitrate/Nitrite, TDS, Metals (total and dissolved), TPH, VOCs, SVOCs, DRO/ORO and Cyanide
QA Reporting Level:	ARCADIS, Level II

Environmental
Project:
Navajo Refinery

Project Number:
TX000836.0008.00003

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999), "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (July 2002), analytical method control criteria, the analytical laboratory Quality Assurance Control Limits, and professional judgment. National Functional Guidelines were used primarily to determine applicable qualification.

The data verification was performed at a Level II and included review of data package completeness, laboratory control samples and method blanks, matrix spike precision and accuracy, surrogate recoveries, and holding time compliance. Laboratory calculations were not verified. Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation. Field sampling documentation was not reviewed as a component of this validation.

Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The following samples were included in this data validation:

SDG Number	Sample ID	Sample Date	Parent Sample
L720999	UG-2	09/09/14	
L720999	UG-3R	09/09/14	
L720999	EB-07	09/09/14	
L720999	MW-13	09/10/14	
L720999	MW-12	09/10/14	
L720999	Trip Blank-13	09/10/14	
L720999	Trip Blank-14	09/10/14	
L720999	Trip Blank-15	09/10/14	

I. VOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
C. Trip Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for VOCs by Method 8260B. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

II. SEMIVOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for SVOCs by Method 8270C. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

III. TOTAL PETROLEUM HYDROCARBONS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for TPH by Method 8015. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

IV. RADIUM

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)	X						X
6. LCS/LCSD (RPD)	X						X
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Field/Lab Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed for radium by Methods 7500Ra. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

III. METALS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X		X	
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Field/Lab Duplicate (RPD)	X						X
11. Serial Dilution (%D)	X						X
12. Total vs. Dissolved		X	X		X		

COMMENTS: The samples were analyzed for metals by Methods 6020. Performance was acceptable, with the following exceptions and notes.

- 3A. Dissolved aluminum and manganese were detected in the method blank. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values.
- 3C. Chromium and dissolved aluminum, calcium, chromium, copper and manganese were detected in the equipment blank. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values.

IV. GENERAL CHEMISTRY

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X			X	
B. Field Blanks	X						X
C. Equipment Blank		X	X			X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Field/Lab Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed by methods 353.2, 9056 and 2540C. Performance was acceptable, with the following exceptions and notes.

- 3A. Chloride was detected in the method blank. The associated field samples were greater than five times the blank value; therefore, qualification of the data was not warranted.
- 3B. Chloride, nitrate and sulfate were detected in the equipment blank. The associated field samples were greater than five times the blank values; therefore, qualification of the data was not warranted.

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.

UJ – Result is considered not detected but estimated due to QC deficiencies.

UB – Non-detect at the Reporting Limit or at the concentration reported if greater than the RL due to associated blank contamination.

R – Result is qualified as unusable, data point is rejected.

Explanation/Notes:

Sample ID	Parameter	Result	Units	Qualifier	Reason
UG-2	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Chromium (D)	2.9	ug/L	UB	Blank Contamination
	Copper (D)	1.1	ug/L	UB	Blank Contamination
UG-3R	Aluminum (D)	<50.0	ug/L	UB	Blank Contamination
	Boron (D)	<200.0	ug/L	UB	Blank Contamination
	Chromium (T)	1.4	ug/L	UB	Blank Contamination
	Chromium (D)	<1.0	ug/L	UB	Blank Contamination
	Copper (D)	<1.0	ug/L	UB	Blank Contamination
	Manganese (T)	<2.0	ug/L	UB	Blank Contamination
	Manganese (D)	<2.0	ug/L	UB	Blank Contamination

VALIDATION PERFORMED BY:

SIGNATURE: Rachelle Borne

DATE: May 5, 2015

PEER REVIEW:



DATE: May 6, 2015

DATA VALIDATION CHECKLIST**NAVAJO REFINERY
BG GW Evaluation**

ARCADIS, Inc.
3850 N. Causeway Blvd.
Suite 990
Metairie, LA 70002
Tel. (504) 832-4174
Fax. (504) 832-2145

Sample Team:	ARCADIS
Sample Matrix:	Water
Analytical Laboratory:	ESC
Laboratory Work Order No.:	L747445 and L747450
Lab Project Manager:	Pamela Langford
Analyses:	Radium, Chloride/Fluoride/Sulfate, Nitrate/Nitrite, TDS, Metals (total and dissolved), TPH, VOCs, SVOCs, DRO/ORO and Cyanide
QA Reporting Level:	ARCADIS, Level II

Environmental
Project:
Navajo Refinery

Project Number:
TX000836.0008.00003

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999), "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (July 2002), analytical method control criteria, the analytical laboratory Quality Assurance Control Limits, and professional judgment. National Functional Guidelines were used primarily to determine applicable qualification.

The data verification was performed at a Level II and included review of data package completeness, laboratory control samples and method blanks, matrix spike precision and accuracy, surrogate recoveries, and holding time compliance. Laboratory calculations were not verified. Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation. Field sampling documentation was not reviewed as a component of this validation.

Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The following samples were included in this data validation:

SDG Number	Sample ID	Sample Date	Parent Sample
L747445	MW-55-0215-BG	02/02/15	
L747445	NP-5-0215-BG	02/02/15	
L747445	EB-20-0215-BG	02/02/15	
L747445	MW-25-0215-BG	02/03/15	
L747445	MW-17-0215-BG	02/03/15	
L747445	UG-1-0215-BG	02/03/15	
L747445	UG-4-0215-BG	02/03/15	
L747445	UG-3R-0215-BG	02/03/15	
L747445	UG-2-0215-BG	02/03/15	
L747445	EB-21-0215-BG	02/03/15	
L747445	MW-136-0215-BG	02/04/15	
L747445	MW-13-0215-BG	02/04/15	
L747445	MW-12-0215-BG	02/04/15	
L747445	EB-22-0215-BG	02/04/15	
L747445	DUP-08-0215-BG	02/02/15	NP-5-0215-BG
L747445	Trip Blank	02/04/15	

I. VOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
C. Trip Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X		X		X	
8. MSD (%R)		X		X		X	
9. MS/MSD (RPD)		X		X		X	
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)		X	X			X	

COMMENTS: The samples were analyzed for VOCs by Method 8260B. Performance was acceptable, with the following exceptions and notes.

- 7-9. Sample MW-17-0215-BG was used as the MS/MSD. The recoveries of all VOC compounds were above the control limit in the MS and the MSD. The parent sample was non-detect for all VOCs; therefore, qualification of the data was not warranted. The RPDs for 1,1,2,2-tetrachloroethane, 1,1-dichloroethene, o-xylene, vinyl chloride and total xylenes were above the control limit. The parent sample was qualified as estimated for 1,1,2,2-tetrachloroethane, 1,1-dichloroethene, o-xylene, vinyl chloride and total xylenes.
11. Sample DUP-08-0215-BG was collected as a field duplicate of NP-5-0215-BG. The RPDs were acceptable at non-detect.

II. SEMIVOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)		X	X		X		

COMMENTS: The samples were analyzed for SVOCs by Method 8270C. Performance was acceptable, with the following exceptions and notes.

11. Sample DUP-08-0215-BG was collected as a field duplicate of NP-5-0215-BG. The RPDs were acceptable at non-detect.

III. TOTAL PETROLEUM HYDROCARBONS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for TPH by Method 8015. Performance was acceptable, with the following exceptions and notes.

- 3B. The C12-C28 fraction was detected in the equipment blank. The associated field samples were qualified as non-detect for this fraction if the sample concentrations were less than five times the blank value.
- 11. Sample DUP-08-0215-BG was collected as a field duplicate of NP-5-0215-BG. The RPDs were acceptable at less than 40%.

IV. RADIUM

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)	X						X
6. LCS/LCSD (RPD)	X						X
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Field/Lab Duplicate (RPD)		X		X		X	

COMMENTS: The samples were analyzed for radium by Methods 7500Ra. Performance was acceptable, with the following exceptions and notes.

- 3B. Radium 226 and Radium 228 were detected in the equipment blanks. The associated field samples were qualified as non-detect for these compounds if the sample concentrations were less than five times the blank values.
- 10. Sample DUP-08-0215-BG was collected as a field duplicate of NP-5-0215-BG. The RPDs were acceptable at less than 40%.

III. METALS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X		X	
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X	X			X	
8. MSD (%R)		X	X			X	
9. MS/MSD (RPD)		X	X			X	
10. Field/Lab Duplicate (RPD)							
11. Serial Dilution (%D)		X		X		X	
12. Total vs. Dissolved		X	X		X		

COMMENTS: The samples were analyzed for metals by Methods 6020. Performance was acceptable, with the following exceptions and notes.

- 3A. Several metals were detected in the method blanks. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values. See the attached qualification summary for details of the qualifications.
- 3C. Several metals were detected in the equipment blanks. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values. See the attached qualification summary for details of the qualifications.
- 7-9. Sample MW-55-0215-BG was used as the MS/MSD. The recoveries and RPDs were acceptable.
Sample UG-4-0215-BG was used as the MS/MSD. The recoveries and RPDs were acceptable.
- 11. Sample MW-55-0215-BG was used as the serial dilution. The %D for dissolved zinc was above the laboratory control limit. All field samples were qualified as estimated for dissolved zinc.
- 10. Sample DUP-08-0215-BG was collected as a field duplicate of NP-5-0215-BG. The RPDs were acceptable at less than 40%.

IV. GENERAL CHEMISTRY

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X					
8. MSD (%R)		X		X		X	
9. MS/MSD (RPD)		X		X		X	
10. Field/Lab Duplicate (RPD)		X		X		X	

COMMENTS: The samples were analyzed by methods 353.2, 9056 and 2540C. Performance was acceptable, with the following exceptions and notes.

- 3B. Chloride, nitrate/nitrite and sulfate were detected in the equipment blank. The associated field samples were qualified as non-detect for these compounds if the sample concentrations were less than five times the blank values.
- 7-9. Sample EB-21-0215-BG was used as the MS/MSD for the anions. The recoveries and RPDs were acceptable.
- Sample EB-20-0215-BG was used as the MS/MSD for cyanide. The recoveries and RPD were acceptable.
10. Sample DUP-08-0215-BG was used as the laboratory duplicate for TDS. The RPD was acceptable.
- Sample DUP-08-0215-BG was collected as a field duplicate of NP-5-0215-BG. The RPDs were acceptable at less than 40%.

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.

UJ – Result is considered not detected but estimated due to QC deficiencies.

UB – Non-detect at the Reporting Limit or at the concentration reported if greater than the RL due to associated blank contamination.

R – Result is qualified as unusable, data point is rejected.

Explanation/Notes:

Sample ID	Parameter	Result	Units	Qualifier	Reason
MW-55-0215-BG	Chloride	<290000	ug/L	UB	Blank Contamination
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Arsenic	<5.8	ug/L	UB	Blank Contamination
	Arsenic (D)	<5.5	ug/L	UB	Blank Contamination
	Calcium (D)	590000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron	<100	ug/L	UB	Blank Contamination
	Lead	<2.0	ug/L	UB	Blank Contamination
	Manganese (D)	<25	ug/L	UB	Blank Contamination
	Nickel	<2.8	ug/L	UB	Blank Contamination
	Nickel (D)	<2.5	ug/L	UB	Blank Contamination
	Radium 228	<1.1	pci/L	UB	Blank Contamination
NP-5-0215-BG	Chloride	<390000	ug/L	UB	Blank Contamination
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Arsenic	<4.7	ug/L	UB	Blank Contamination
	Arsenic (D)	<4.6	ug/L	UB	Blank Contamination
	Calcium (D)	500000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron	<100	ug/L	UB	Blank Contamination
	Lead (D)	<2.0	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Radium 228	<1.6	pci/L	UB	Blank Contamination
EB-20-0215-BG	Calcium (D)	2000	ug/L	J	Serial Dilution %D
MW-25-0215-BG	Sulfate	<4100000	ug/L	UB	Blank Contamination
	Nitrate/Nitrite	<340	ug/L	UB	Blank Contamination
	Aluminum (D)	<1000	ug/L	UB	Blank Contamination
	Boron (D)	<420	ug/L	UB	Blank Contamination
	Calcium (D)	1000000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Radium 226	<1.6	pci/L	UB	Blank Contamination
	Radium 228	<1.3	pci/L	UB	Blank Contamination
MW-17-0215-BG	Sulfate	<1100000	ug/L	UB	Blank Contamination
	Aluminum (D)	<100			

Sample ID	Parameter	Result	Units	Qualifier	Reason
MW-17-0215-BG	Arsenic	<2.0	ug/L	UB	Blank Contamination
	Arsenic (D)	<2.0	ug/L	UB	Blank Contamination
	Boron (D)	<120	ug/L	UB	Blank Contamination
	Calcium (D)	380000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron	<100	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<2.1	pci/L	UB	Blank Contamination
	1,1-Dichloroethene	<1.0	ug/L	UJ	MS/MSD RPD
	1,1,1,2-Tetrachloroethane	<1.0	ug/L	UJ	MS/MSD RPD
	Vinyl chloride	<1.0	ug/L	UJ	MS/MSD RPD
	o-Xylene	<1.0	ug/L	UJ	MS/MSD RPD
	Total Xylenes	<3.0	ug/L	UJ	MS/MSD RPD
UG-1-0215-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Arsenic	<2.0	ug/L	UB	Blank Contamination
	Arsenic (D)	<2.0	ug/L	UB	Blank Contamination
	Boron (D)	<480	ug/L	UB	Blank Contamination
	Calcium (D)	490000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron	<100	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.7	pci/L	UB	Blank Contamination
UG-4-0215-BG	Nitrate/Nitrite	<430	ug/L	UB	Blank Contamination
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Arsenic	<2.0	ug/L	UB	Blank Contamination
	Arsenic (D)	<2.0	ug/L	UB	Blank Contamination
	Calcium (D)	580000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron	<250	ug/L	UB	Blank Contamination
	Lead	<2.0	ug/L	UB	Blank Contamination
	Nickel	<2.4	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Radium 226	<1.2	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination
UG-3R-0215-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination

Sample ID	Parameter	Result	Units	Qualifier	Reason
UG-3R-0215-BG	Arsenic	<2.4	ug/L	UB	Blank Contamination
	Arsenic (D)	<2.3	ug/L	UB	Blank Contamination
	Boron (D)	<240	ug/L	UB	Blank Contamination
	Calcium (D)	400000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron	<100	ug/L	UB	Blank Contamination
	Lead	<2.0	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Radium 226	<1.7	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination
UG-2-0215-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Arsenic	<2.2	ug/L	UB	Blank Contamination
	Arsenic (D)	<2.9	ug/L	UB	Blank Contamination
	Boron (D)	<290	ug/L	UB	Blank Contamination
	Calcium (D)	360000	ug/L	J	Serial Dilution %D
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron	<100	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination
EB-21-0215-BG	Calcium (D)	150	ug/L	J	Serial Dilution %D
MW-136-0215-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Barium	<15.0	ug/L	UB	Blank Contamination
	Barium (D)	<25	ug/L	UB	Blank Contamination
	Boron (D)	<620	ug/L	UB	Blank Contamination
	Calcium (D)	730000	ug/L	J	Serial Dilution %D
	Lead (D)	<2.0	ug/L	UB	Blank Contamination
	Manganese (D)	<25.0	ug/L	UB	Blank Contamination
	C10-C28	<100	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
MW-13-0215-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Barium (D)	<25	ug/L	UB	Blank Contamination
	Boron (D)	<620	ug/L	UB	Blank Contamination
	Calcium (D)	690000	ug/L	J	Serial Dilution %D
	C10-C28	<100	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
MW-12-0215-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Boron (D)	<520	ug/L	UB	Blank Contamination
	Calcium (D)	800000	ug/L	J	Serial Dilution %D
	C10-C28	<100	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination

Sample ID	Parameter	Result	Units	Qualifier	Reason
EB-22-0215-BG	Calcium (D)	99	ug/L	J	Serial Dilution %D
DUP-08-0215-BG	Chloride	380000	ug/L	UB	Blank Contamination
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Arsenic	<4.4	ug/L	UB	Blank Contamination
	Arsenic (D)	<4.2	ug/L	UB	Blank Contamination
	Calcium (D)	510000	ug/L	J	Serial Dilution %D
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Lead	<2.0	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination

VALIDATION PERFORMED BY:

SIGNATURE: Rachelle Borne

DATE: June 26, 2015

PEER REVIEW:



DATE: June 26, 2015

DATA VALIDATION CHECKLIST**NAVAJO REFINERY
BG GW Evaluation**

ARCADIS, Inc.
3850 N. Causeway Blvd.
Suite 990
Metairie, LA 70002
Tel. (504) 832-4174
Fax. (504) 832-2145

Sample Team:	ARCADIS
Sample Matrix:	Water
Analytical Laboratory:	ESC
Laboratory Work Order No.:	L757942 and L757943
Lab Project Manager:	Pamela Langford
Analyses:	Radium, Chloride/Fluoride/Sulfate, Nitrate/Nitrite, TDS, Metals (total and dissolved), TPH, VOCs, SVOCs, DRO/ORO and Cyanide
QA Reporting Level:	ARCADIS, Level II

Environmental
Project:
Navajo Refinery

Project Number:
TX000836.0008.00003

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999), "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (July 2002), analytical method control criteria, the analytical laboratory Quality Assurance Control Limits, and professional judgment. National Functional Guidelines were used primarily to determine applicable qualification.

The data verification was performed at a Level II and included review of data package completeness, laboratory control samples and method blanks, matrix spike precision and accuracy, surrogate recoveries, and holding time compliance. Laboratory calculations were not verified. Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation. Field sampling documentation was not reviewed as a component of this validation.

Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The following samples were included in this data validation:

SDG Number	Sample ID	Sample Date	Parent Sample
L757942	MW-13-0415-BG	04/07/15	
L757942	MW-12-0415-BG	04/07/15	
L757942	EB-25-0415-BG	04/08/15	
L757942	MW-136-0415-BG	04/08/15	
L757942	MW-25-0415-BG	04/08/15	
L757942	MW-17-0415-BG	04/08/15	
L757942	MW-55-0415-BG	04/08/15	
L757942	DUP-10-0415-BG	04/07/15	MW-12-0415-BG
L757942	Trip Blank	04/08/15	

I. VOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
C. Trip Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)		X	X			X	

COMMENTS: The samples were analyzed for VOCs by Method 8260B. Performance was acceptable, with the following exceptions and notes.

- Sample DUP-10-0415-BG was collected as a field duplicate of MW-12-0415-BG. The RPDs were acceptable at non-detect.

II. SEMIVOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)		X	X			X	

COMMENTS: The samples were analyzed for SVOCs by Method 8270C. Performance was acceptable, with the following exceptions and notes.

11. Sample DUP-10-0415-BG was collected as a field duplicate of MW-12-0415-BG. The RPDs were acceptable at non-detect.

III. TOTAL PETROLEUM HYDROCARBONS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)		X	X			X	

COMMENTS: The samples were analyzed for TPH by Method 8015. Performance was acceptable, with the following exceptions and notes.

11. Sample DUP-10-0415-BG was collected as a field duplicate of MW-12-0415-BG. The RPD was acceptable at less than 40%.

IV. RADIUM

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)	X						X
6. LCS/LCSD (RPD)	X						X
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Field/Lab Duplicate (RPD)		X	X			X	

COMMENTS: The samples were analyzed for radium by Methods 7500Ra. Performance was acceptable, with the following exceptions and notes.

- 3B. Radium 226 and Radium 228 were detected in the equipment blanks. The associated field samples were qualified as non-detect for these compounds if the sample concentrations were less than five times the blank values.
- 10. Sample DUP-10-0415-BG was collected as a field duplicate of MW-12-0415-BG. The RPD was acceptable at less than 40%.

III. METALS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X		X	
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X		X		X	
8. MSD (%R)		X		X		X	
9. MS/MSD (RPD)		X	X			X	
10. Field/Lab Duplicate (RPD)		X					
11. Serial Dilution (%D)	X						X
12. Total vs. Dissolved		X	X			X	

COMMENTS: The samples were analyzed for metals by Methods 6020. Performance was acceptable, with the following exceptions and notes.

- 3A. Total iron, nickel and vanadium were detected in the method blank. Dissolved aluminum was detected in the method blank. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values.
- 3C. Chromium and vanadium were detected in the equipment blank. Dissolved aluminum, calcium, manganese and sodium were detected in the equipment blank. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values.
- 7-9. Sample MW-13-0415-BG was used as the MS/MSD. The recovery of dissolved zinc was below the control limit in the MS and the MSD. All field samples were qualified as estimated for dissolved zinc.
- Sample DUP-10-0415-BG was used as the MS/MSD. The recoveries and RPDs were acceptable.
10. Sample DUP-10-0415-BG was collected as a field duplicate of MW-12-0415-BG. The RPDs were acceptable at less than 40%.

IV. GENERAL CHEMISTRY

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X	X			X	
8. MSD (%R)		X	X			X	
9. MS/MSD (RPD)		X	X			X	
10. Field/Lab Duplicate (RPD)		X	X			X	

COMMENTS: The samples were analyzed by methods 353.2, 9056 and 2540C. Performance was acceptable, with the following exceptions and notes.

3B. Chloride, nitrate and sulfate were detected in the equipment blank. The associated field samples were qualified as non-detect for these compounds if the sample concentrations were less than five times the blank values.

7-9. Sample MW-25-0415-BG was used as the MS/MSD for cyanide. The recoveries and RPD were acceptable.

Sample EB-25-0415-BG was used as the MS/MSD for the anions. The recoveries and RPDs were acceptable.

10. Sample EB-25-0415-BG was used as the laboratory duplicate for cyanide. The RPD was acceptable.

Sample DUP-10-0415-BG was collected as a field duplicate of MW-12-0415-BG. The RPDs were acceptable at less than 40%.

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.

UJ – Result is considered not detected but estimated due to QC deficiencies.

UB – Non-detect at the Reporting Limit or at the concentration reported if greater than the RL due to associated blank contamination.

R – Result is qualified as unusable, data point is rejected.

Explanation/Notes:

Sample ID	Parameter	Result	Units	Qualifier	Reason
MW-13-0415-BG	Nitrate/Nitrite	<688	ug/L	UB	Blank Contamination
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Vanadium	<5.0	ug/L	UB	Blank Contamination
	Zinc (D)	13.2	ug/L	J	MS/MSD Recovery
	Radium 226	<1.0	pci/L	UB	Blank Contamination
MW-12-0415-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Vanadium	<5.0	ug/L	UB	Blank Contamination
	Zinc (D)	<25.0	ug/L	UJ	MS/MSD Recovery
	Radium 226	<1.0	pci/L	UB	Blank Contamination
EB-25-0514-BG	Zinc (D)	<25.0	ug/L	UJ	MS/MSD Recovery
MW-136-0415-BG	Zinc (D)	<25.0	ug/L	UJ	MS/MSD Recovery
MW-25-0415-BG	Zinc (D)	<25.0	ug/L	UJ	MS/MSD Recovery
MW-17-0415-BG	Zinc (D)	<25.0	ug/L	UJ	MS/MSD Recovery
MW-55-0415-BG	Zinc (D)	<25.0	ug/L	UJ	MS/MSD Recovery
DUP-10-0415-BG	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Vanadium	<50.0	ug/L	UB	Blank Contamination
	Zinc (D)	<25.0	ug/L	UJ	MS/MSD Recovery

VALIDATION PERFORMED BY:

SIGNATURE: Rachelle Borne

DATE: June 25, 2015

PEER REVIEW:



DATE: June 26, 2015

DATA VALIDATION CHECKLIST**NAVAJO REFINERY
BG GW Evaluation**

ARCADIS, Inc.
3850 N. Causeway Blvd.
Suite 990
Metairie, LA 70002
Tel. (504) 832-4174
Fax. (504) 832-2145

Sample Team:	ARCADIS
Sample Matrix:	Water
Analytical Laboratory:	ESC
Laboratory Work Order No.:	L758265 and L758267
Lab Project Manager:	Pamela Langford
Analyses:	Radium, Chloride/Fluoride/Sulfate, Nitrate/Nitrite, TDS, Metals (total and dissolved), TPH, VOCs, SVOCs, DRO/ORO and Cyanide
QA Reporting Level:	ARCADIS, Level II

Environmental
Project:
Navajo Refinery

Project Number:
TX000836.0008.00003

Analytical data were evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" (October 1999), "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (July 2002), analytical method control criteria, the analytical laboratory Quality Assurance Control Limits, and professional judgment. National Functional Guidelines were used primarily to determine applicable qualification.

The data verification was performed at a Level II and included review of data package completeness, laboratory control samples and method blanks, matrix spike precision and accuracy, surrogate recoveries, and holding time compliance. Laboratory calculations were not verified. Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation. Field sampling documentation was not reviewed as a component of this validation.

Only QA/QC results and analytical data associated with analytes/compounds of interest were reviewed for this validation.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The following samples were included in this data validation:

SDG Number	Sample ID	Sample Date	Parent Sample
L758267	UG-4-0415-BG	04/07/15	
L758267	EB-26-0415-BG	04/07/15	
L758267	NP-5-0415-BG	04/08/15	
L758267	UG-1-0415-BG	04/08/15	
L758267	UG-2-0415-BG	04/08/15	
L758267	UG-3R-0415-BG	04/08/15	
L758267	EB-27-0415-BG	04/08/15	
L758267	Trip Blank	04/08/15	

I. VOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
C. Trip Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for VOCs by Method 8260B. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

II. SEMIVOLATILE ORGANIC COMPOUNDS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for SVOCs by Method 8270C. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

III. TOTAL PETROLEUM HYDROCARBONS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Equipment Blanks		X	X		X		
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. Laboratory control sample duplicate (LCSD) (%R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Surrogate Recoveries (%R)		X	X		X		
11. Field Duplicate Comparison (RPD)	X						X

COMMENTS: The samples were analyzed for TPH by Method 8015. Performance was acceptable, with the following exceptions and notes.

No qualification necessary.

IV. RADIUM

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X	X		X		
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)	X						X
6. LCS/LCSD (RPD)	X						X
7. Matrix spike (MS) (%R)	X						X
8. MSD (%R)	X						X
9. MS/MSD (RPD)	X						X
10. Field/Lab Duplicate (RPD)	X						X

COMMENTS: The samples were analyzed for radium by Methods 7500Ra. Performance was acceptable, with the following exceptions and notes.

- 3B. Radium 226 and Radium 228 were detected in the equipment blanks. The associated field samples were qualified as non-detect for these compounds if the sample concentrations were less than five times the blank values.

III. METALS

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		REPORTED/ REVIEWED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X			X	
2. Reporting limits		X	X			X	
3. Blanks							
A. Method Blanks		X		X		X	
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X		X		X	
8. MSD (%R)		X		X		X	
9. MS/MSD (RPD)		X	X			X	
10. Field/Lab Duplicate (RPD)	X						X
11. Serial Dilution (%D)	X						X
12. Total vs. Dissolved		X	X		X		

COMMENTS: The samples were analyzed for metals by Methods 6020. Performance was acceptable, with the following exceptions and notes.

- 3A. Several metals were detected in the method blanks. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values. See the attached qualification summary for details of the qualifications.
- 3C. Several metals were detected in the equipment blanks. The associated field samples were qualified as non-detect for these metals if the sample concentrations were less than ten times the blank values. See the attached qualification summary for details of the qualifications.
- 7-9. Sample UG-4-0415BG was used as the MS/MSD. The recovery of mercury was below the control limit in the MS and the MSD. All field samples were qualified as estimated for mercury.

IV. GENERAL CHEMISTRY

ITEMS REVIEWED	REPORTED/ REVIEWED		EXCEPTIONS NOTED		GENERAL COMMENTS NOTED		ITEM NOT REQUIRED
	NO	YES	NO	YES	NO	YES	
1. Holding times		X	X		X		
2. Reporting limits		X	X		X		
3. Blanks							
A. Method Blanks		X		X		X	
B. Field Blanks	X						X
C. Equipment Blank		X		X		X	
4. Laboratory control sample (LCS) (%R)		X	X		X		
5. LCSD (% R)		X	X		X		
6. LCS/LCSD (RPD)		X	X		X		
7. Matrix spike (MS) (%R)		X					
8. MSD (%R)		X		X		X	
9. MS/MSD (RPD)		X		X		X	
10. Field/Lab Duplicate (RPD)		X		X		X	

COMMENTS: The samples were analyzed by methods 353.2, 9056 and 2540C. Performance was acceptable, with the following exceptions and notes.

- 3A. Chloride was detected in the method blank. The associated field samples were qualified as non-detect for chloride if the sample concentrations were less than five times the blank value.
- 3B. Chloride, nitrate and sulfate were detected in the equipment blank. The associated field samples were qualified as non-detect for these compounds if the sample concentrations were less than five times the blank values.
- 7-9. Sample UG-4-0415-BG was used as the MS/MSD for nitrate/nitrite. The recovery of nitrate/nitrite was above the control limit in the MS and the MSD. The parent sample was qualified as estimated for nitrate/nitrite.

Sample EB-26-0415-BG was used as the MS/MSD for the anions. The recoveries and RPDs were acceptable.
- 10. Sample EB-27-0415-BG was used as the laboratory duplicate for the anions. The RPD for chloride and sulfate was above the control limit. The parent sample was qualified as estimated for chloride and sulfate.

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.

UJ – Result is considered not detected but estimated due to QC deficiencies.

UB – Non-detect at the Reporting Limit or at the concentration reported if greater than the RL due to associated blank contamination.

R – Result is qualified as unusable, data point is rejected.

Explanation/Notes:

Sample ID	Parameter	Result	Units	Qualifier	Reason
UG-4-0415-BG	Nitrate/Nitrite	<388	ug/L	UBJ	Blank Contamination and MS/MSD Recovery
	Mercury	<0.2	ug/L	UJ	MS/MSD Recovery
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron (D)	<100	ug/L	UB	Blank Contamination
	Lead (D)	<2.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Zinc (D)	<25	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.5	pci/L	UB	Blank Contamination
EB-26-0415-BG	Mercury	<0.2	ug/L	UJ	MS/MSD Recovery
NP-5-0415-BG	Mercury	<0.2	ug/L	UJ	MS/MSD Recovery
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Barium	<8.7	ug/L	UB	Blank Contamination
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron (D)	<100	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination
UG-1-0415-BG	Chloride	<100000	ug/L	UB	Blank Contamination
	Mercury	<0.2	ug/L	UJ	MS/MSD Recovery
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Boron (D)	<1000	ug/L	UB	Blank Contamination
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron (D)	<100	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Manganese (D)	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Zinc (D)	<25	ug/L	UB	Blank Contamination

Sample ID	Parameter	Result	Units	Qualifier	Reason
UG-1-0415-BG	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination
UG-2-0415-BG	Sulfate	<970000	ug/L	UB	Blank Contamination
	Mercury	<0.2	ug/L	UJ	MS/MSD Recovery
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Boron (D)	<1000	ug/L	UB	Blank Contamination
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron (D)	<100	ug/L	UB	Blank Contamination
	Lead (D)	<2.0	ug/L	UB	Blank Contamination
	Nickel	<4.4	ug/L	UB	Blank Contamination
	Nickel (D)	<5.0	ug/L	UB	Blank Contamination
	Zinc (D)	<25	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination
UG-3R-0415-BG	Mercury	<0.2	ug/L	UJ	MS/MSD Recovery
	Aluminum (D)	<100	ug/L	UB	Blank Contamination
	Boron (D)	<1000	ug/L	UB	Blank Contamination
	Chromium	<2.0	ug/L	UB	Blank Contamination
	Chromium (D)	<2.0	ug/L	UB	Blank Contamination
	Iron (D)	<100	ug/L	UB	Blank Contamination
	Lead (D)	<2.0	ug/L	UB	Blank Contamination
	Manganese	<5.0	ug/L	UB	Blank Contamination
	Manganese (D)	<5.0	ug/L	UB	Blank Contamination
	Nickel	<2.0	ug/L	UB	Blank Contamination
	Nickel (D)	<2.0	ug/L	UB	Blank Contamination
	Zinc (D)	<25	ug/L	UB	Blank Contamination
	Radium 226	<1.0	pci/L	UB	Blank Contamination
	Radium 228	<1.0	pci/L	UB	Blank Contamination
EB-27-0415-BG	Mercury	<0.2	ug/L	UJ	MS/MSD Recovery
	Chloride	284	ug/L	J	Lab Duplicate RPD
	Fluoride	35.4	ug/L	J	Lab Duplicate RPD

VALIDATION PERFORMED BY:

SIGNATURE: Rachelle Borne

DATE: June 24, 2015

PEER REVIEW:



DATE: _____

Appendix C

Statistical Evaluation
Documentation

Table C-1. Assumptions Made in the Interpretation of the Dissolved Metals Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Aluminum	MW-12	7/29/2014	< 0.002 UB	< 0.002
		2/4/2015	0.028 UB	0.028
		4/6/2015	0.03 UB	0.03
	MW-13	7/29/2014	< 0.002 UB	< 0.002
		2/4/2015	0.017 UB	0.017
	MW-17	9/11/2014	0.015 JB	0.015
		2/3/2015	0.02 UB	0.02
	MW-25	7/29/2014	< 0.002 UB	< 0.002
		9/10/2014	0.014 JB	0.014
		2/3/2015	0.054 UB	0.054
	MW-55	2/2/2015	0.02 UB	0.02
	MW-136	7/30/2014	< 0.002 UB	< 0.002
		9/9/2014	0.017 JB	0.017
		2/4/2015	0.017 JB	0.017
	NP-5	9/9/2014	0.022 JB	0.022
		2/2/2015	0.018 UB	0.018
		4/8/2015	< 0.002 UB	< 0.002
	UG-1	7/30/2014	< 0.002 UB	< 0.002
		9/9/2014	0.014 JB	0.014
		2/3/2015	0.017 UB	0.017
		4/8/2015	< 0.002 UB	< 0.002
	UG-2	7/30/2014	< 0.002 UB	< 0.002
		9/9/2014	< 0.002 UB	< 0.002
		2/3/2015	0.034 UB	0.034
		4/8/2015	< 0.002 UB	< 0.002
	UG-3R	7/30/2014	< 0.002 UB	< 0.002
		9/9/2014	< 0.002 UB	< 0.002
		2/3/2015	0.017 UB	0.017
		4/8/2015	< 0.002 UB	< 0.002
	UG-4	9/11/2014	0.02 JB	0.02
		2/3/2015	0.0084 UB	0.0084
		4/7/2015	< 0.002 UB	< 0.002
Arsenic	MW-17	2/3/2015	0.0016 UB	0.0016
	MW-55	2/2/2015	0.0055 UB	0.0055
	NP-5	2/2/2015	0.0046 UB	0.0046
	UG-1	2/3/2015	0.002 UB	0.002
	UG-2	2/3/2015	0.0029 UB	0.0029
	UG-3R	2/3/2015	0.0023 UB	0.0023
	UG-4	2/3/2015	0.00088 UB	0.00088
Barium	MW-13	2/4/2015	0.025 UB	0.025
	MW-136	2/4/2015	0.011 UB	0.011
	UG-2	11/12/2014	0.11	a

Table C-1. Assumptions Made in the Interpretation of the Dissolved Metals Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Boron	MW-12	2/4/2015	0.52 UB	0.52
	MW-13	1/7/2015	0.79 VO1	0.79
		2/4/2015	0.62 UB	0.62
		5/4/2015	0.38 O1V	0.38
	MW-17	2/3/2015	0.12 UB	0.12
	MW-25	11/11/2014	0.31 V	0.31
		2/3/2015	0.42 UB	0.42
	MW-55	3/3/2015	1.25 O1V	1.25
	MW-136	7/30/2014	< 0.0015 UB	0.72
		2/4/2015	0.62 UB	0.62
	NP-5	9/9/2014	1.8 O1V	1.8
	UG-1	2/3/2015	0.48 UB	0.48
		4/8/2015	< 0.075 UB	< 0.075
	UG-2	2/3/2015	0.29 UB	0.29
		4/8/2015	< 0.075 UB	< 0.075
	UG-3R	9/9/2014	< 0.015 UB	< 0.015
		2/3/2015	0.24 UB	0.24
		4/8/2015	< 0.075 UB	< 0.075
Chromium	MW-12	1/7/2015	0.00087 JB	0.00087
	MW-13	1/7/2015	0.0011 JB	0.0011
	MW-17	9/11/2014	0.002 B	0.002
		10/27/2014	0.0019 B	0.0019
		11/11/2014	0.0017 B	0.0017
		1/7/2015	0.0018 JB	0.0018
		2/3/2015	0.0015 UB	0.0015
	MW-25	9/10/2014	0.00055 JB	0.00055
		1/7/2015	0.00074 JB	0.00074
	MW-55	10/27/2014	0.0019 B	0.0019
		11/12/2014	0.0017 B	0.0017
		1/6/2015	0.0022 B	0.0022
		2/2/2015	0.0013 UB	0.0013
	MW-136	9/9/2014	0.0009 JB	0.0009
		1/6/2015	0.0013 JB	0.0013
	NP-5	9/9/2014	0.00088 JB	0.00088
		11/11/2014	0.00076 JB	0.00076
		1/5/2015	0.0013 JB	0.0013
		2/2/2015	0.00066 UB	0.00066
		4/8/2015	< 0.00054 UB	< 0.00054
	UG-1	9/9/2014	0.001 B	0.001
		10/27/2014	0.0016 B	0.0016
		11/13/2014	0.0012 B	0.0012
		1/6/2015	0.002 B	0.002
		2/3/2015	0.0013 UB	0.0013
		4/8/2015	< 0.00054 UB	< 0.00054

Table C-1. Assumptions Made in the Interpretation of the Dissolved Metals Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Chromium	UG-2	9/9/2014	< 0.00054 UB	< 0.00054
		10/27/2014	0.00097 JB	0.00097
		11/12/2014	0.00064 JB	0.00064
		1/6/2015	0.0011 JB	0.0011
		2/3/2015	0.00061 UB	0.00061
		4/8/2015	< 0.00054 UB	< 0.00054
	UG-3R	9/9/2014	< 0.00054 UB	< 0.00054
		10/27/2014	0.0012 B	0.0012
		11/13/2014	0.0007 JB	0.0007
		1/6/2015	0.0014 JB	0.0014
		2/3/2015	0.0007 UB	0.0007
		4/8/2015	< 0.00054 UB	< 0.00054
	UG-4	9/11/2014	0.0015 B	0.0015
		10/27/2014	0.0014 B	0.0014
		11/13/2014	0.001 B	0.001
		1/6/2015	0.0014 JB	0.0014
		2/3/2015	0.00096 UB	0.00096
		4/7/2015	< 0.00054 UB	< 0.00054
Copper	MW-17	5/6/2015	0.00851	0.000851
	UG-3R	9/9/2014	< 0.00052 UB	< 0.00052
Iron	MW-25	10/27/2014	< 0.25 J3J5	< 0.25
		11/11/2014	< 0.25 J6	< 0.25
	NP-5	4/8/2015	< 0.015 UB	< 0.015
	UG-1	4/8/2015	< 0.015 UB	< 0.015
	UG-2	4/8/2015	< 0.015 UB	< 0.015
	UG-3R	4/8/2015	< 0.015 UB	< 0.015
	UG-4	4/7/2015	< 0.015 UB	< 0.015
Lead	MW-136	2/4/2015	< 0.0012 UB	< 0.0012
	NP-5	2/2/2015	0.00055 UB	0.00055
Manganese	MW-12	7/29/2014	< 0.00025 UB	< 0.00025
	MW-17	9/11/2014	0.00031 JB	0.00031
	MW-25	10/27/2014	2.1 V	2.1
		11/11/2014	0.13 O1J6	0.13
	MW-55	2/2/2015	0.025 UB	0.025
	MW-136	2/4/2015	0.0041 UB	0.0041
	UG-1	4/8/2015	< 0.00025 UB	< 0.00025
	UG-3R	9/9/2014	< 0.00025 UB	< 0.00025
		4/8/2015	< 0.00025 UB	< 0.00025
	UG-1	9/9/2014	0.00036 JB	0.00036

Table C-1. Assumptions Made in the Interpretation of the Dissolved Metals Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Nickel	MW-55	2/2/2015	0.0025 UB	0.0025
	NP-5	2/2/2015	0.0014 UB	0.0014
		4/8/2015	< 0.00035 UB	< 0.00035
	UG-1	2/3/2015	0.0011 UB	0.0011
		2/3/2015	0.0011 UB	0.0011
		4/8/2015	< 0.00035 UB	< 0.00035
	UG-2	4/8/2015	< 0.00035 UB	< 0.00035
	UG-3R	2/3/2015	0.001 UB	0.001
		4/8/2015	< 0.00035 UB	< 0.00035
	UG-4	2/3/2015	0.0019 UB	0.0019
		4/7/2015	< 0.00035 UB	< 0.00035
Selenium	MW-13	7/29/2014	< 0.00038 UB	< 0.00038
	MW-25	7/29/2014	< 0.00038 UB	< 0.00038
	MW-136	7/30/2014	< 0.00038 UB	< 0.00038
	UG-1	7/30/2014	< 0.00038 UB	< 0.00038
	UG-2	7/30/2014	< 0.00038 UB	< 0.00038
	UG-3R	7/30/2014	< 0.00038 UB	< 0.00038
Silver	MW-136	12/16/2014	< 0.00031 J6	< 0.00031
Zinc	MW-12	4/6/2015	< 0.0026 J	< 0.0026
	MW-13	1/7/2015	0.025 J6	0.025
	MW-17	4/7/2015	< 0.0026 J	< 0.0026
	MW-25	11/11/2014	0.02 J6	0.02
		4/7/2015	< 0.0026 J	< 0.0026
	MW-55	4/7/2015	< 0.0026 J	< 0.0026
	MW-136	4/7/2015	< 0.0026 J	< 0.0026
	UG-2	4/8/2015	< 0.0026 UB	< 0.0026
	UG-3R	4/8/2015	< 0.0026 UB	< 0.0026
	UG-4	4/7/2015	< 0.0026 UB	< 0.0026

Definitions and Notes:

All data qualifiers are defined as in Table 3 of the report.

a = The result was interpreted as a transcription error and the data point was not used in the statistical analysis.

mg/L = milligrams per Liter

Table C-2. Assumptions Made in the Interpretation of the Total Metals Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Arsenic	MW-17	2/3/2015	0.00094 UB	0.00094
	MW-55	2/2/2015	0.0058 UB	0.0058
	NP-5	2/2/2015	0.0047 UB	0.0047
	UG-1	2/3/2015	0.0013 UB	0.0013
	UG-2	2/3/2015	0.0022 UB	0.0022
	UG-3R	2/3/2015	0.0024 UB	0.0024
	UG-4	2/3/2015	0.0016 UB	0.0016
Barium	MW-136	2/4/2015	0.000015 UB	0.000015
	NP-5	4/8/2015	< 0.00036 UB	< 0.00036
Chromium	MW-12	1/7/2015	0.0012 B	0.0012
	MW-13	1/7/2015	0.0011 B	0.0011
	MW-17	9/11/2014	0.0018 B	0.0018
		10/27/2014	0.0019 B	0.0019
		1/7/2015	0.0019 B	0.0019
		2/3/2015	0.0018 UB	0.0018
	MW-25	9/10/2014	0.0006 JB	0.0006
		1/7/2015	0.00072 JB	0.00072
		2/3/2015	0.00081 UB	0.00081
	MW-55	10/27/2014	0.0016 B	0.0016
		1/6/2015	0.0017 B	0.0017
		2/2/2015	0.0014 UB	0.0014
	MW-136	9/9/2014	0.0032 BJ	0.0032
		10/27/2014	0.0014 B	0.0014
		1/6/2015	0.0016 B	0.0016
	NP-5	9/9/2014	0.0011 BJ	0.0011
		10/27/2014	0.0012 B	0.0012
		1/5/2015	0.0009 JB	0.0009
		2/2/2015	0.00058 UB	0.00058
		4/8/2015	< 0.00054 UB	< 0.00054
	UG-1	9/9/2014	0.0016 BJ	0.0016
		10/27/2014	0.0013 B	0.0013
		1/6/2015	0.0014 B	0.0014
		2/3/2015	0.0014 UB	0.0014
		4/8/2015	< 0.00054 UB	< 0.00054
	UG-2	10/27/2014	0.00065 JB	0.00065
		1/6/2015	0.00067 JB	0.00067
		4/8/2015	< 0.00054	< 0.00054
	UG-3R	9/9/2014	< 0.00054 UB	< 0.00054
		10/27/2014	0.0012 B	0.0012
		1/6/2015	0.0012 B	0.0012
		2/3/2015	0.00099 UB	0.00099
		4/8/2015	< 0.00054 UB	< 0.00054

Table C-2. Assumptions Made in the Interpretation of the Total Metals Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Chromium	UG-4	9/11/2014	0.0061 B	0.0061
		10/27/2014	0.0088 B	0.0088
		1/6/2015	0.0014 B	0.0014
		2/3/2015	0.0011 UB	0.0011
		4/7/2015	< 0.00054 UB	< 0.00054
Iron	MW-17	2/3/2015	0.015 UB	<0.015
	MW-55	2/2/2015	0.02 UB	0.02
	NP-5	2/2/2015	0.031 UB	0.031
	UG-1	2/3/2015	0.049 UB	0.049
	UG-2	2/3/2015	0.017 UB	0.017
	UG-3R	2/3/2015	0.045 UB	0.045
	UG-4	2/3/2015	0.25 UB	0.25
Lead	MW-55	2/2/2015	0.0013 UB	0.0013
	UG-3R	2/3/2015	0.00032 UB	< 0.00032
	UG-4	2/3/2015	0.00042 UB	< 0.00042
Manganese	MW-12	7/29/2014	< 0.00025 UB	< 0.00025
	MW-13	1/7/2015	0.63 J3V	0.63
	MW-17	2/3/2015	0.0022 UB	0.0022
	MW-25	10/27/2014	0.83 V	0.83
	NP-5	2/2/2015	0.00033 UB	0.00033
		4/8/2015	< 0.00025 UB	< 0.00025
	UG-1	2/3/2015	0.00087 UB	0.00087
		4/8/2015	< 0.00025 UB	< 0.00025
	UG-3R	9/9/2014	< 0.00025 UB	< 0.00025
		2/3/2015	0.0015 UB	0.0015
		4/8/2015	< 0.00025 UB	< 0.00025
Mercury	UG-2	4/8/2015	< 0.000049 UJ	< 0.000049
	UG-3R	4/8/2015	< 0.000049 UJ	< 0.000049
	UG-4	4/7/2015	< 0.000049 UJ	< 0.000049
Nickel	MW-12	11/12/2014	0.002 JB	0.002
		12/17/2014	0.0019 JB	0.0019
	MW-13	12/17/2014	0.0012 JB	0.0012
	MW-17	2/3/2015	0.00056 UB	0.00056
	MW-25	11/11/2014	0.005 JB	0.005
		12/17/2014	0.015 B	0.015
	MW-55	11/12/2014	0.0023 B	0.0023
		12/16/2014	0.03 B	0.03
		2/2/2015	0.0028 UB	0.0028
	MW-136	11/11/2014	0.0028 JB	0.0028
		12/16/2014	0.0019 JB	0.0019
	NP-5	11/11/2014	0.0022 JB	0.0022
		12/16/2014	0.0019 JB	0.0019
		2/2/2015	0.0011 UB	0.0011
		4/8/2015	< 0.00035 UB	< 0.00035
	UG-1	12/17/2014	0.0012 JB	0.0012
		2/3/2015	0.0014 UB	0.0014

Table C-2. Assumptions Made in the Interpretation of the Total Metals Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Nickel (continued)		4/8/2015	< 0.00035 UB	< 0.00035
	UG-2	11/12/2014	0.0097 B	0.0097
		12/17/2014	0.012 B	0.012
		4/8/2015	< 0.00035 UB	< 0.00035
	UG-3R	11/13/2014	0.0013 JB	0.0013
		12/17/2014	0.018 B	0.018
		2/3/2015	0.0011 UB	0.0011
		4/8/2015	< 0.00035 UB	< 0.00035
	UG-4	11/13/2014	0.0031 B	0.0031
		12/17/2014	0.0029 B	0.0029
		2/3/2015	0.0024 UB	0.0024
		4/7/2015	< 0.00035 UB	< 0.00035
Selenium	MW-12	7/29/2014	< 0.00038 UB	< 0.00038
	MW-13	7/29/2014	< 0.00038 UB	< 0.00038
	MW-25	7/29/2014	< 0.00038 UB	< 0.00038
	MW-136	7/30/2014	< 0.00038 UB	< 0.00038
	UG-1	7/30/2014	< 0.00038 UB	< 0.00038
	UG-2	7/30/2014	< 0.00038 UB	< 0.00038
	UG-3R	7/30/2014	< 0.00038 UB	< 0.00038
Vanadium	MW-12	4/6/2015	0.0033 UB	0.0033
	MW-13	4/6/2015	0.0046 UB	0.0046

Definitions and Notes:

All data qualifiers are defined as in Table 3 of the report.

mg/L = milligrams per Liter

Table C-3 Assumptions Made in the Interpretation of the Water Quality Parameters Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
Calcium	MW-12	8/18/2014	740 O1V	740
	MW-13	5/4/2015	420 V	420
		6/1/2015	446 V	446
	MW-17	7/28/2014	440 V	440
	MW-25	11/11/2014	1200 V	1200
	MW-55	3/3/2015	606 V	606
	NP-5	9/9/2014	520 O1V	520
	UG-2	6/3/2015	0.873 J	a
Chloride	MW-25	5/6/2015	< 0.052	a
	UG-1	4/8/2015	< 5.2 UB	a
		6/3/2015	634	a
	UG-2	6/3/2015	689	a
	UG-4	6/2/2015	704 UB	a
	b	b	b	b
Cyanide	MW-55	7/28/2014	0.0021 JP1	0.0021
	MW-136	11/11/2014	< 0.0018 J6	< 0.0018
		12/16/2014	< 0.0018 J6	< 0.0018
Fluoride	MW-12	6/1/2015	19	a
	MW-13	6/1/2015	17	a
	MW-17	6/2/2015	17.6	a
	MW-25	6/2/2015	20.2	a
	MW-55	7/28/2014	2.0	a
		5/6/2015	1.8 J6	1.8
		6/2/2015	18.2	a
	MW-136	6/2/2015	20.1	a
	NP-5	6/2/2015	19.6	a
	UG-1	6/3/2015	22.6	a
		6/3/2015	15.7	a
	UG-2	6/3/2015	17.4	a
	UG-4	6/2/2015	20.2	a
Nitrate/Nitrite	MW-13	4/6/2015	0.69 UB	0.69
	MW-25	3/4/2015	0.34 UB	0.34
	UG-4	4/7/2015	< 0.02 UBJ	< 0.02
Sodium	MW-12	8/18/2014	1400 V	1400
	MW-25	11/11/2014	2600 V	2600
	MW-55	3/3/2015	185 O1V	185
	NP-5	9/9/2014	220 O1V	220
	UG-2	6/3/2015	0.305 J	a
Sulfate	MW-17	5/6/2015	< 0.077	a
	MW-25	2/3/2015	4100 UB	4100
	MW-136	5/6/2015	< 0.077	a
	UG-2	4/8/2015	< 7.7 UB	a
	UG-4	12/17/2014	< 0.077	a

Table C-3 Assumptions Made in the Interpretation of the Water Quality Parameters Data

Background Groundwater Investigation Report
Navajo Refining Company, L.L.C., Artesia, New Mexico

Analyte	Monitoring Well	Sample Date	Analytical Result mg/L	Interpreted Result mg/L
TDS	MW-17	5/6/2015	2000 Q	2000
	MW-25	5/6/2015	18000 Q	18000
	MW-55	5/6/2015	5100 Q	5100
	MW-136	5/6/2015	4500 Q	4500

Definitions and Notes:

All data qualifiers are defined as in Table 3 of the report.

- a. The result was interpreted as an analytical error and the data point was not used in the statistical analysis.
- b. There were 55 additional cases of UB-flagged data for chloride. All of these cases were interpreted to be quantitative.

mg/L = milligrams per Liter

TDS = total dissolved solids

Figure C-1. Probability Plot - Dissolved Aluminum, Cube-root Transformation

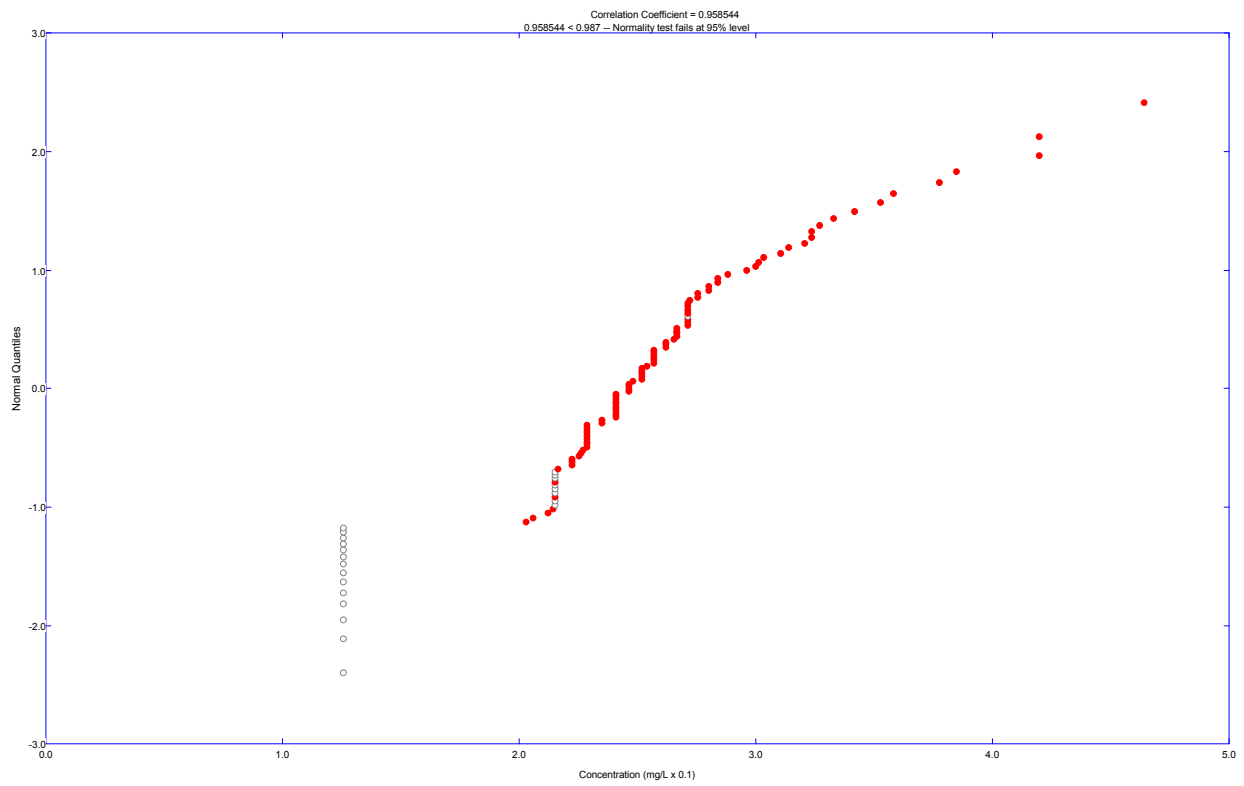


Figure C-2. Probability Plot - Dissolved Arsenic, Detections Only, Logarithmic Transformation

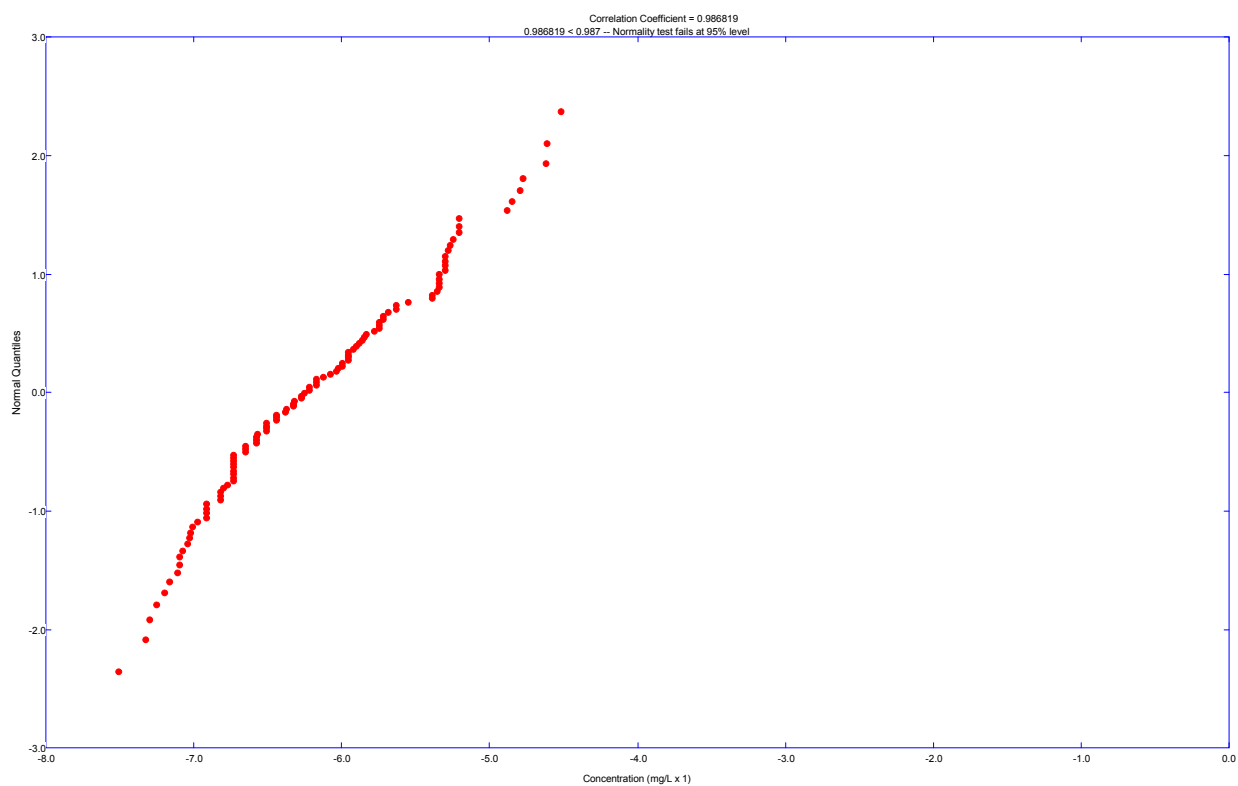


Figure C-3. Probability Plot - Dissolved Barium, Cube-root Transformation

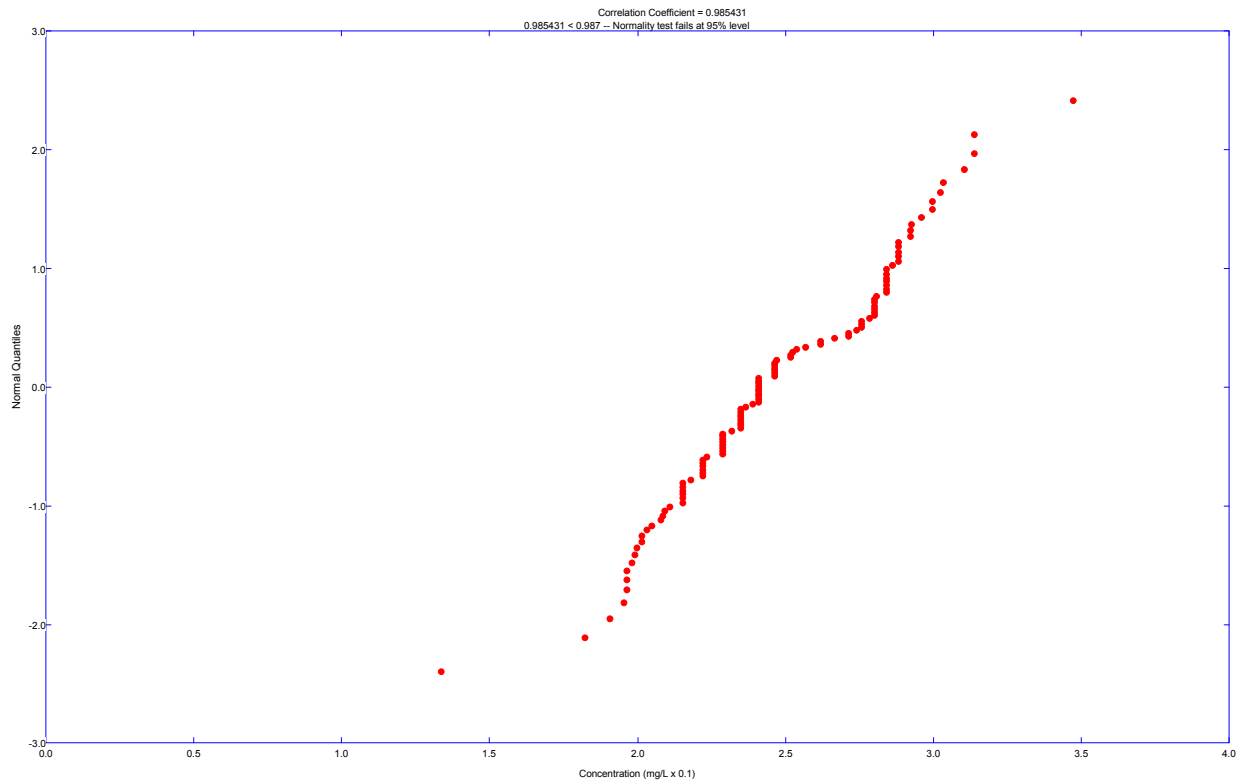


Figure C-4. Probability Plot - Dissolved Boron, Cube-root Transformation Correlation

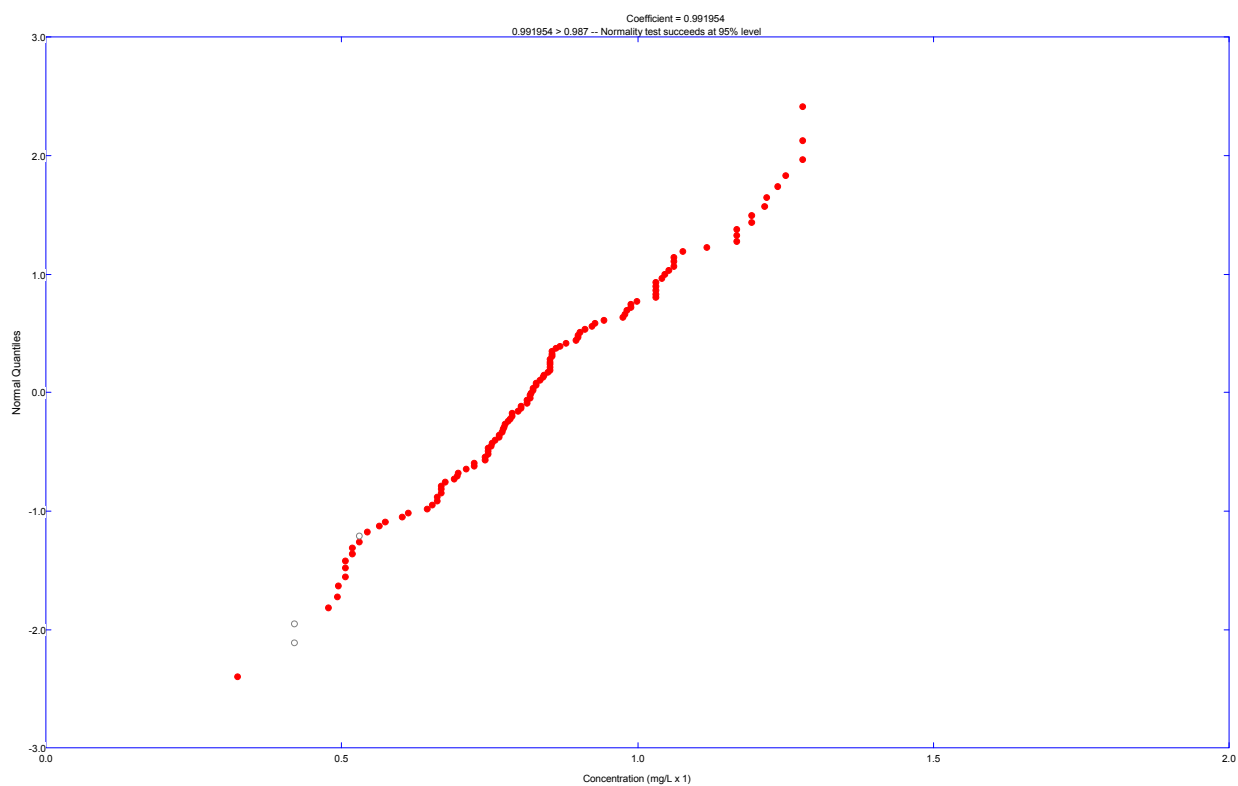


Figure C-5. Probability Plot - Dissolved Chromium, Detections Only, Logarithmic Transformation

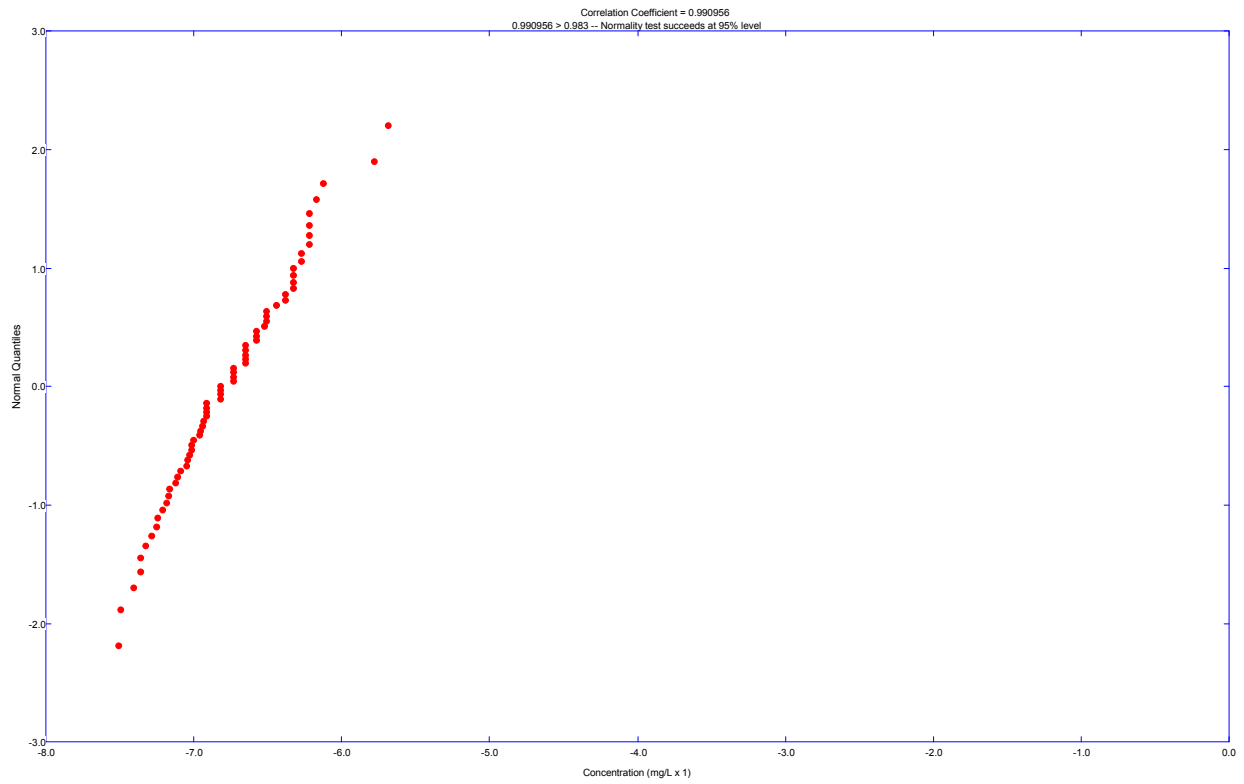


Figure C-6. Probability Plot - Dissolved Copper, Detections Only, Cube-root Transformation

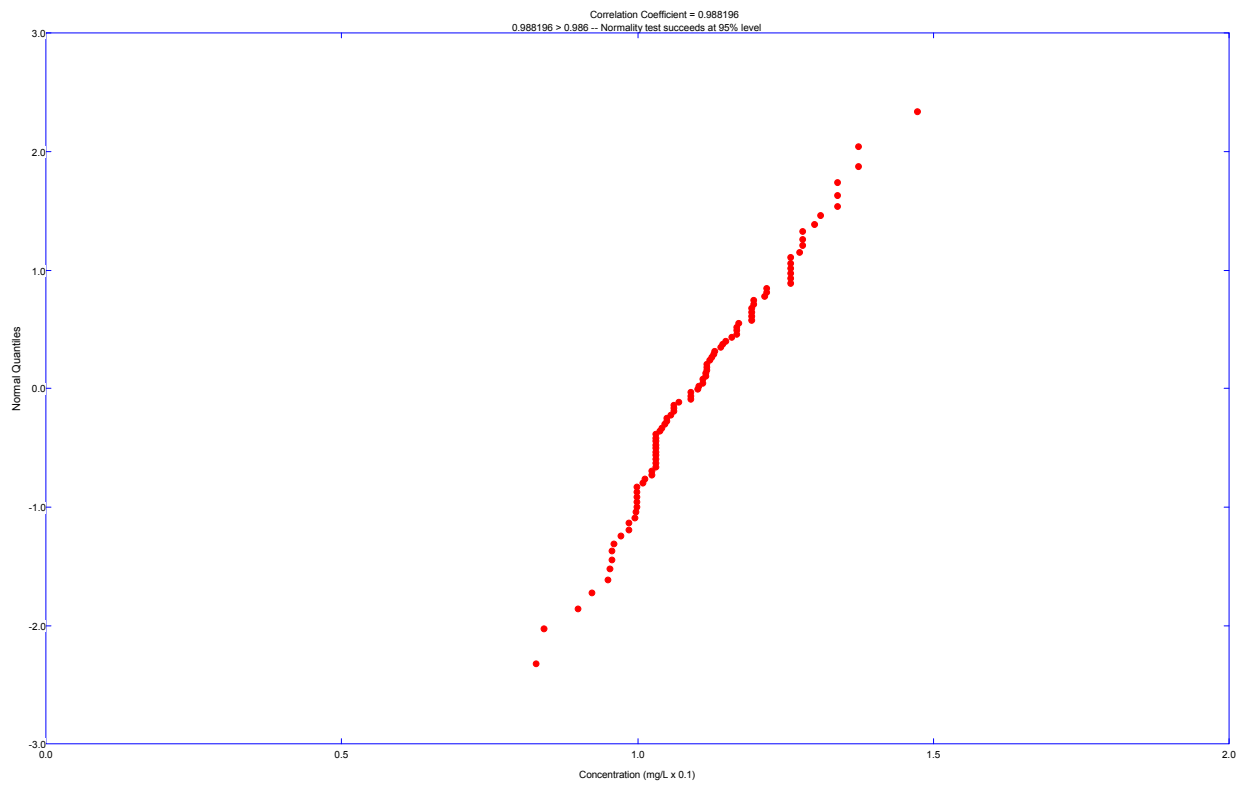


Figure C-7. Probability Plot - Dissolved Manganese, Logarithmic Transformation

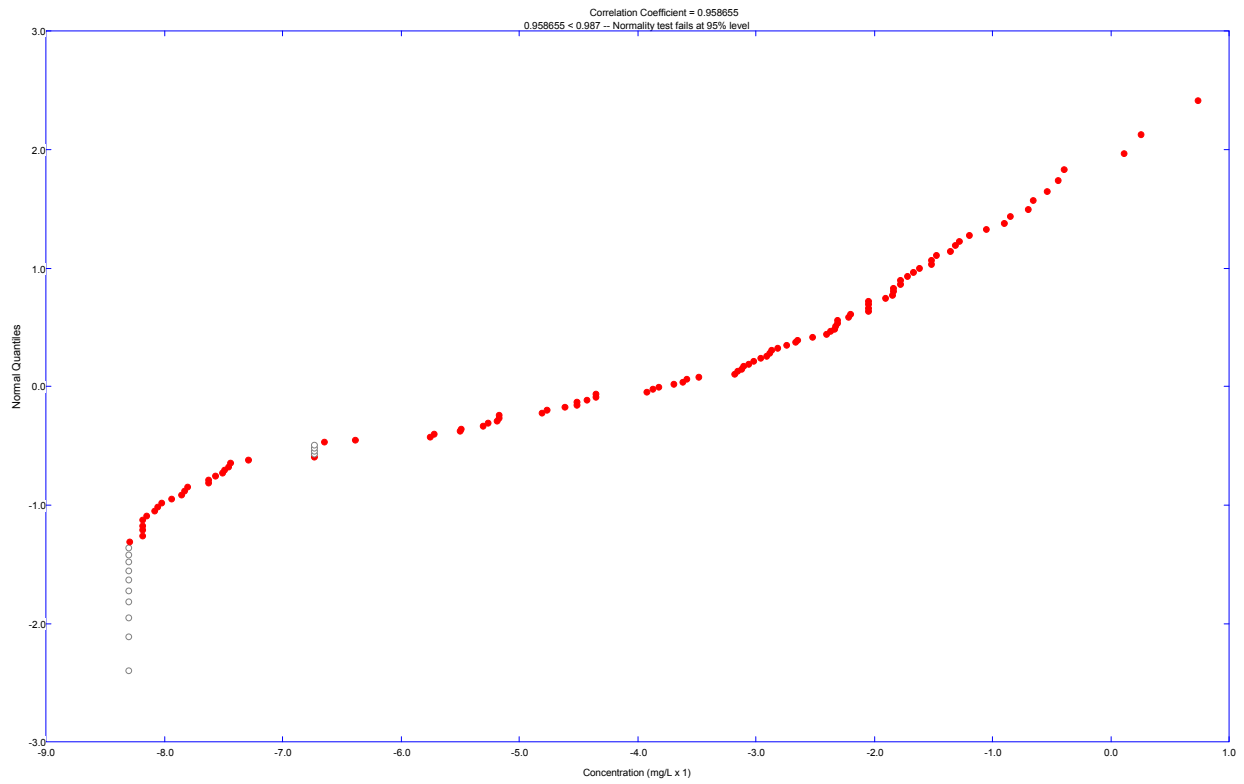


Figure C-8. Probability Plot - Dissolved Molybdenum, Logarithmic Transformation

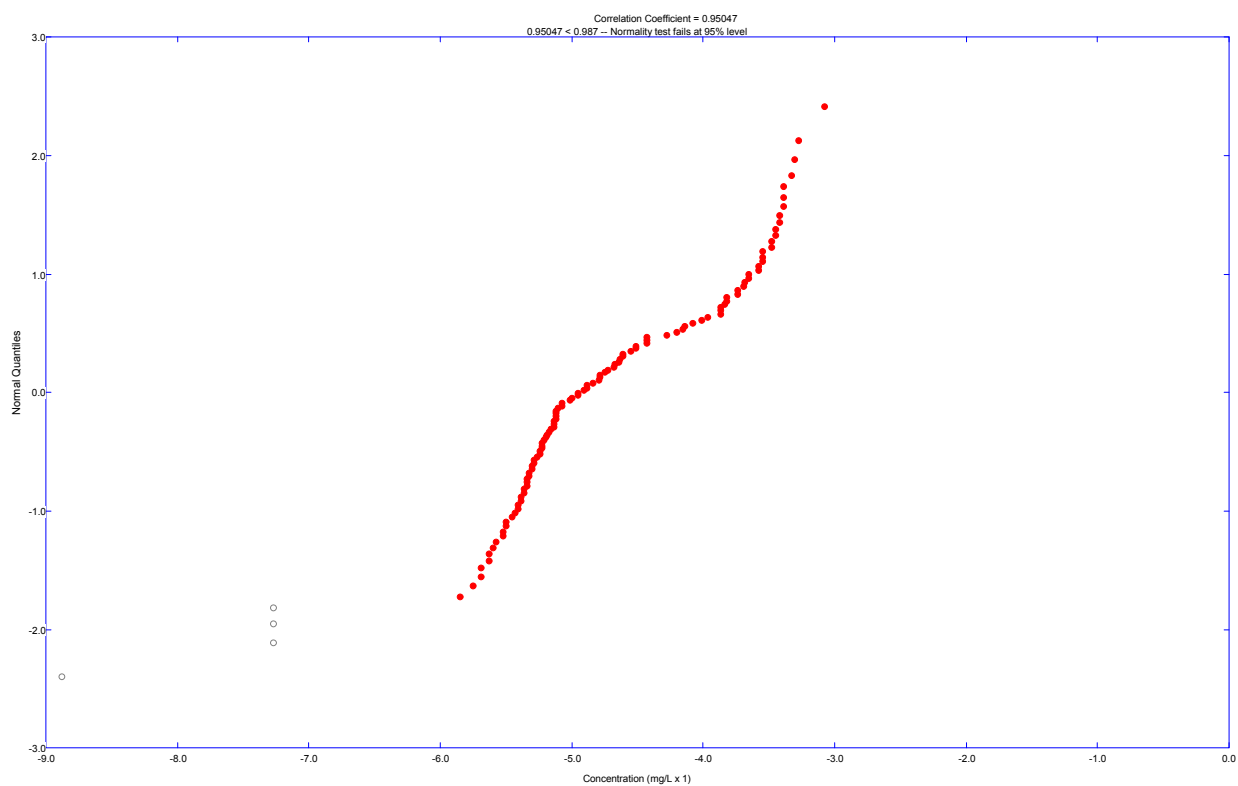


Figure C-9. Probability Plot - Dissolved Nickel, Logarithmic Transformation Correlation

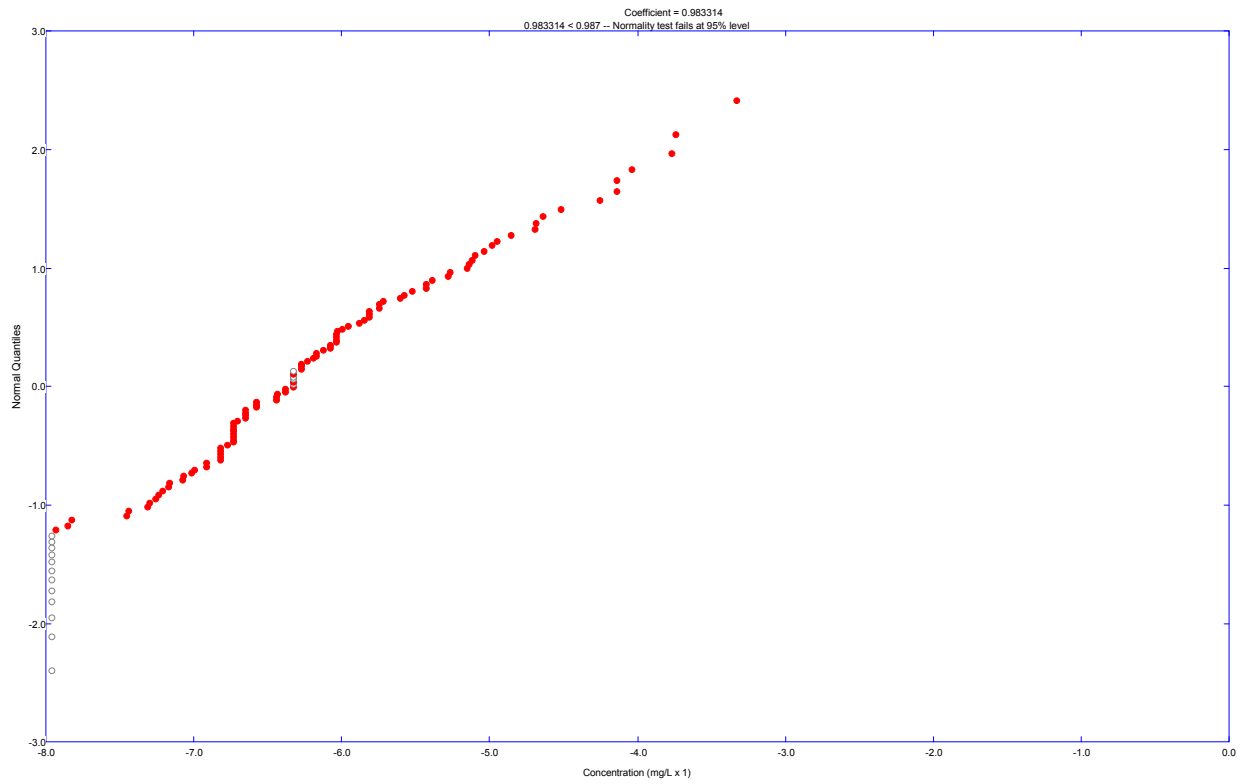


Figure C-10. Probability Plot - Dissolved Selenium, Cube-root Transformation Correlation

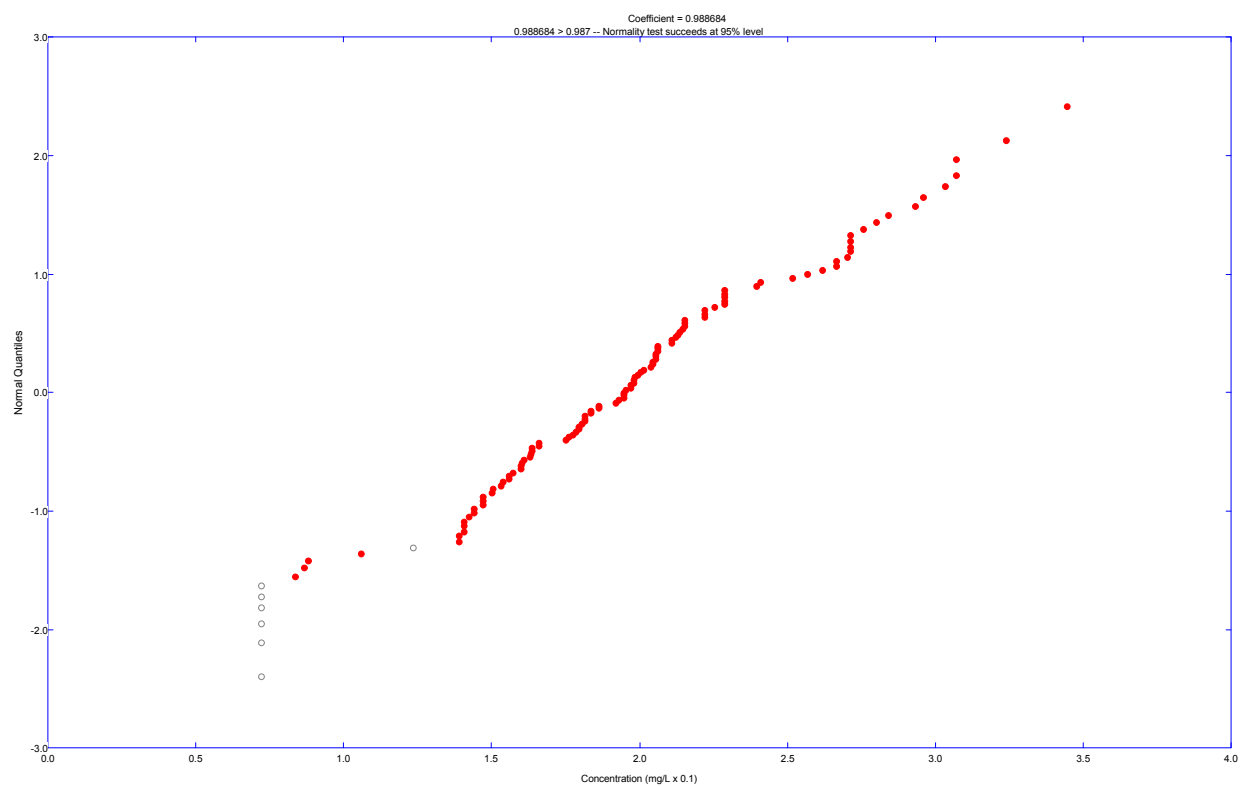


Figure C-11. Probability Plot - Dissolved Uranium, Detections Only, Logarithmic Transformation

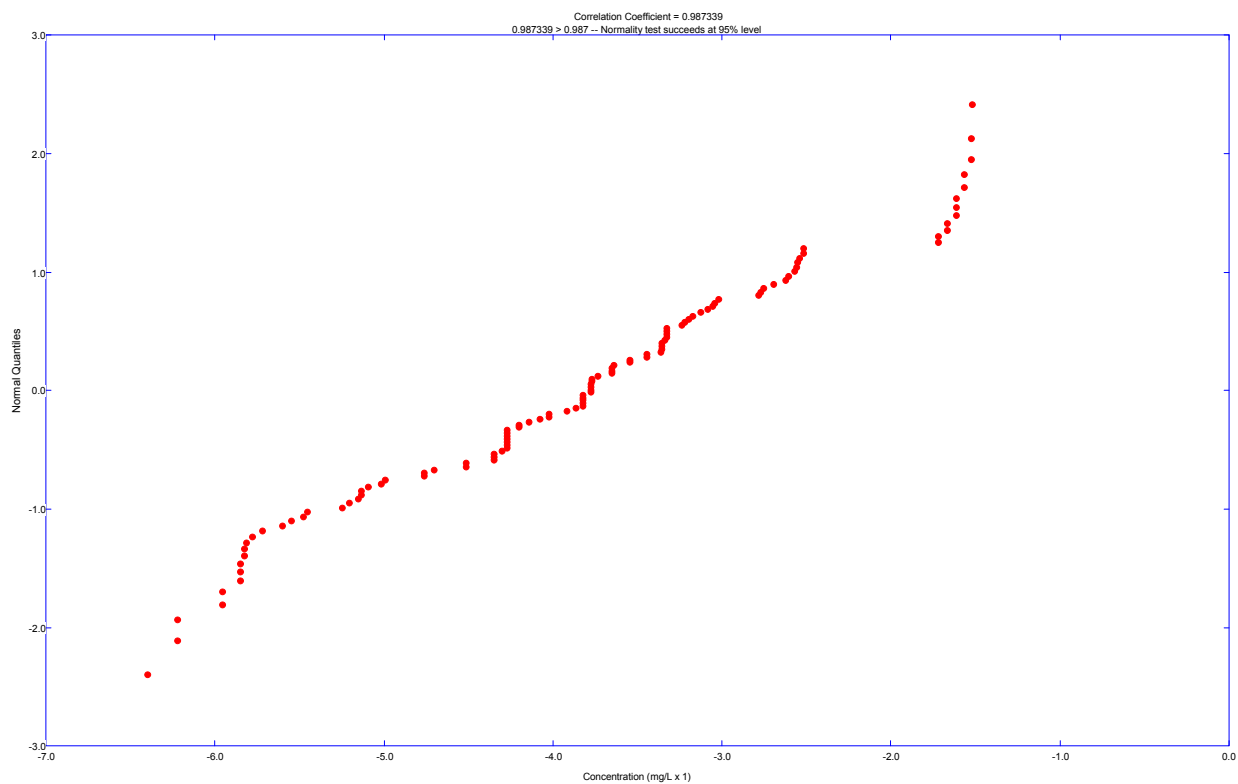


Figure C-12. Probability Plot - Dissolved Vanadium, No Transformation

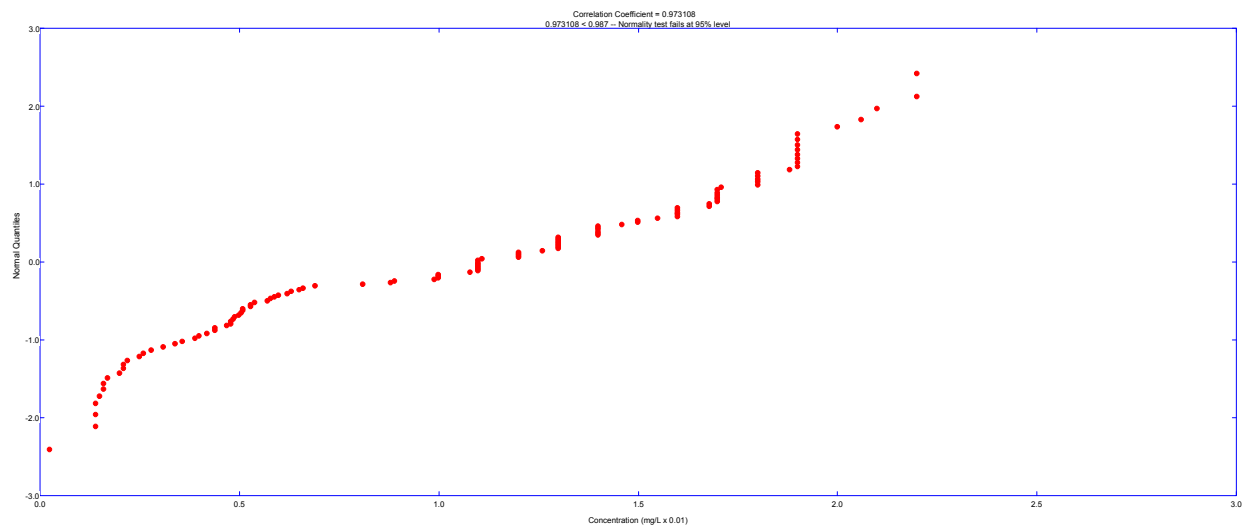


Figure C-13. Probability Plot - Dissolved Calcium, Cube-root Transformation

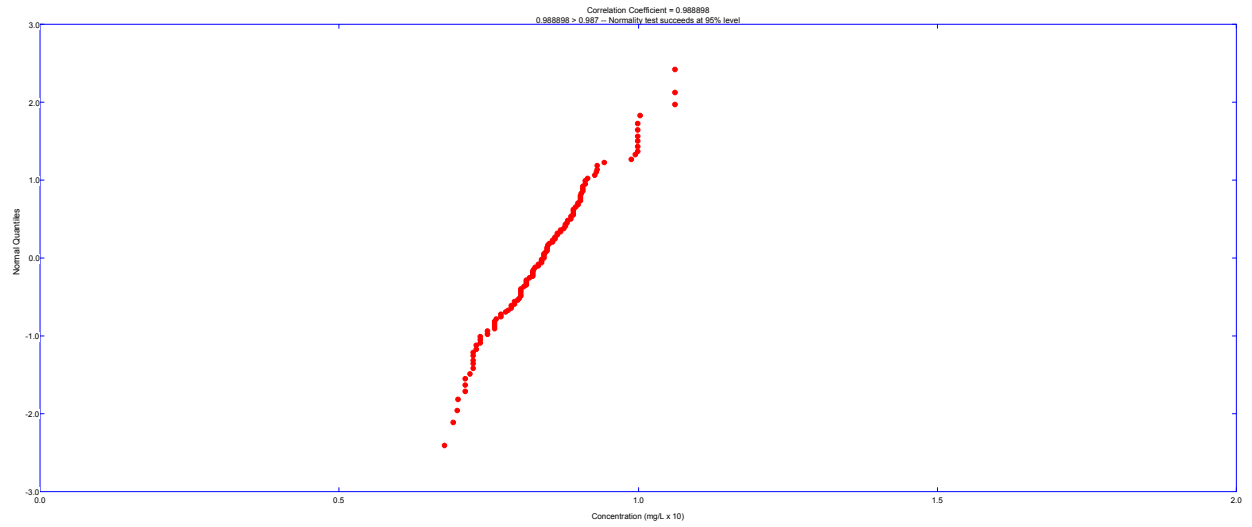


Figure C-14. Probability Plot - Dissolved Chloride, Logarithmic Transformation

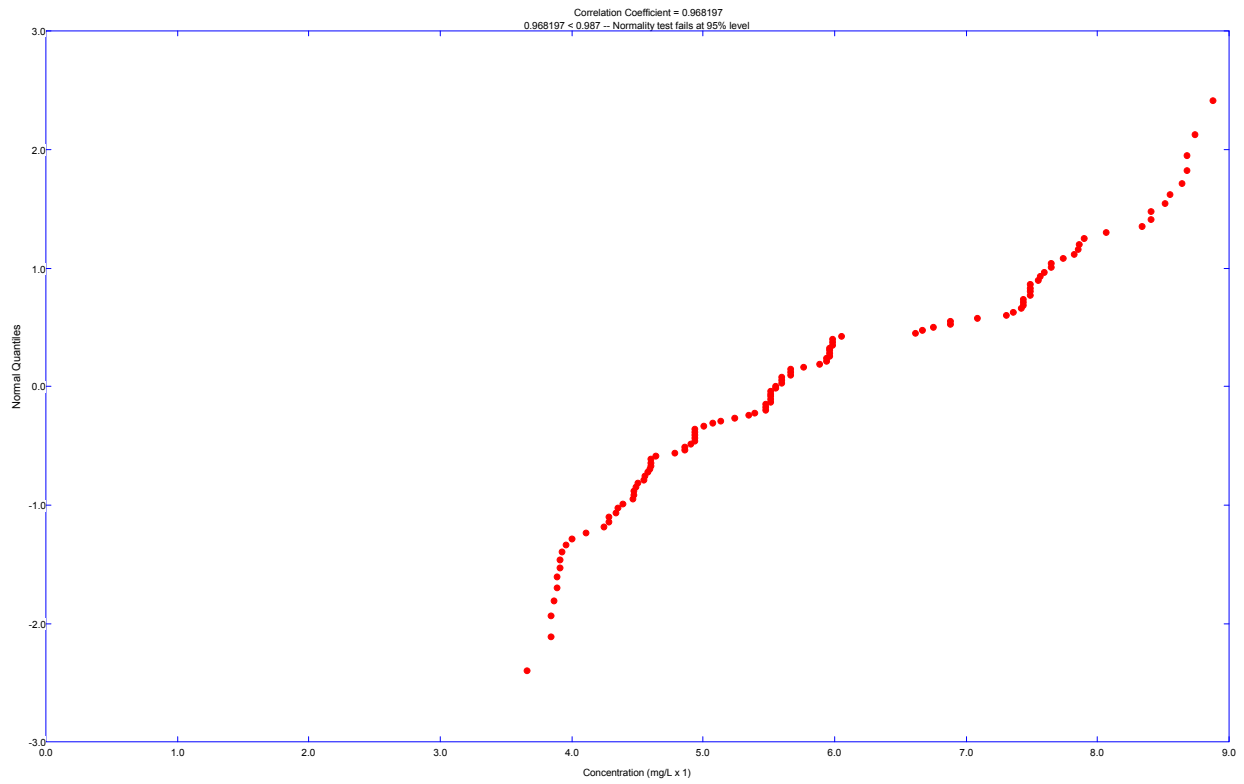
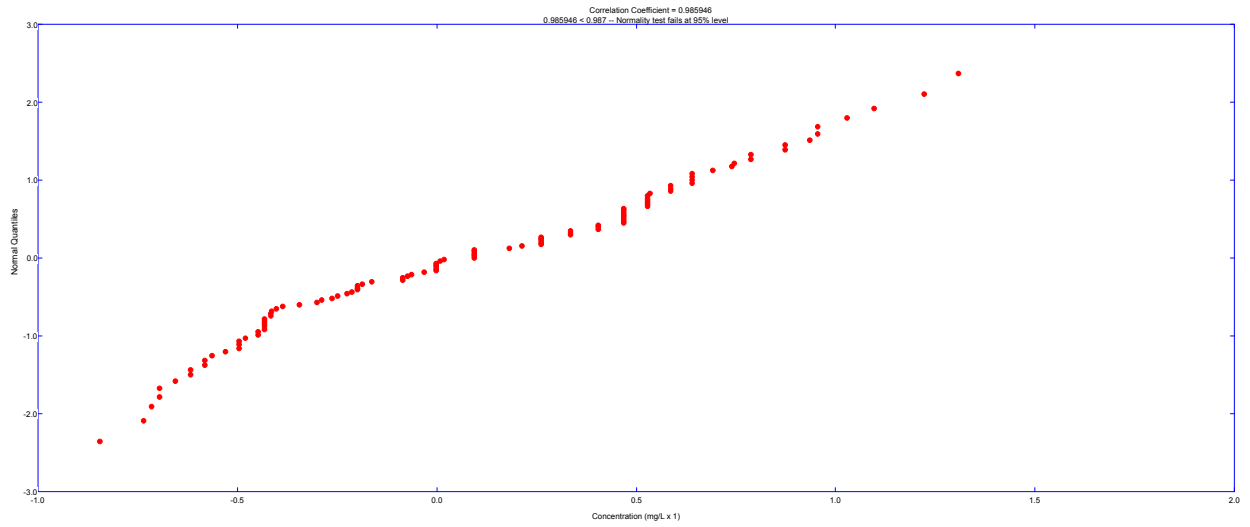


Figure C-15. Probability Plot - Dissolved Fluoride, Logarithmic Transformation



Correlation Coefficient = 0.989774
0.989774 > 0.987 -- Normality test succeeds at 95% level

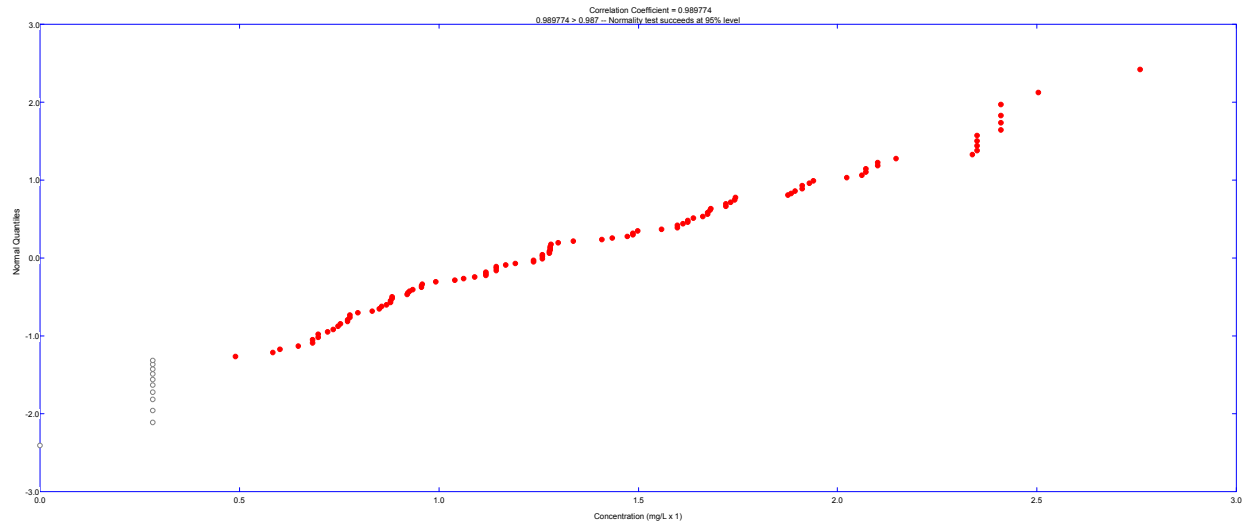


Figure C-17. Probability Plot - Dissolved Potassium, Cube-root Transformation

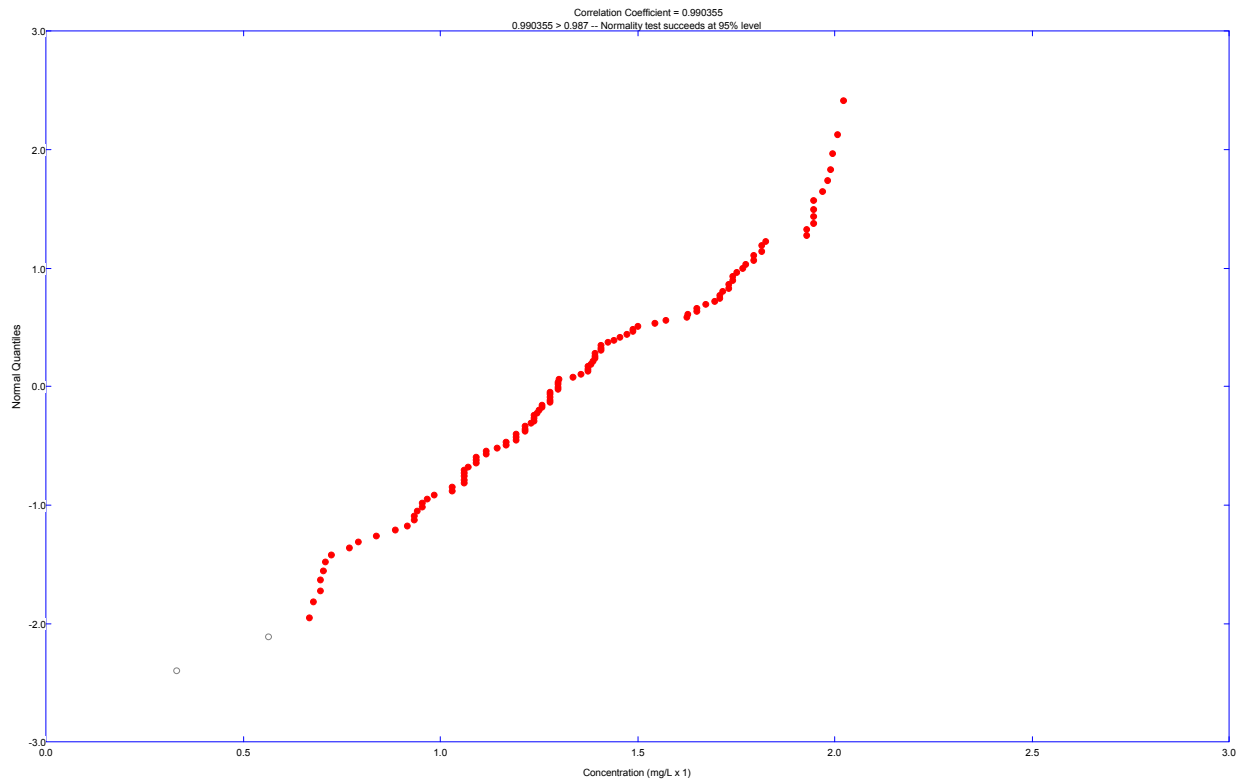


Figure C-18. Probability Plot - Dissolved Sodium, Logarithmic Transformation

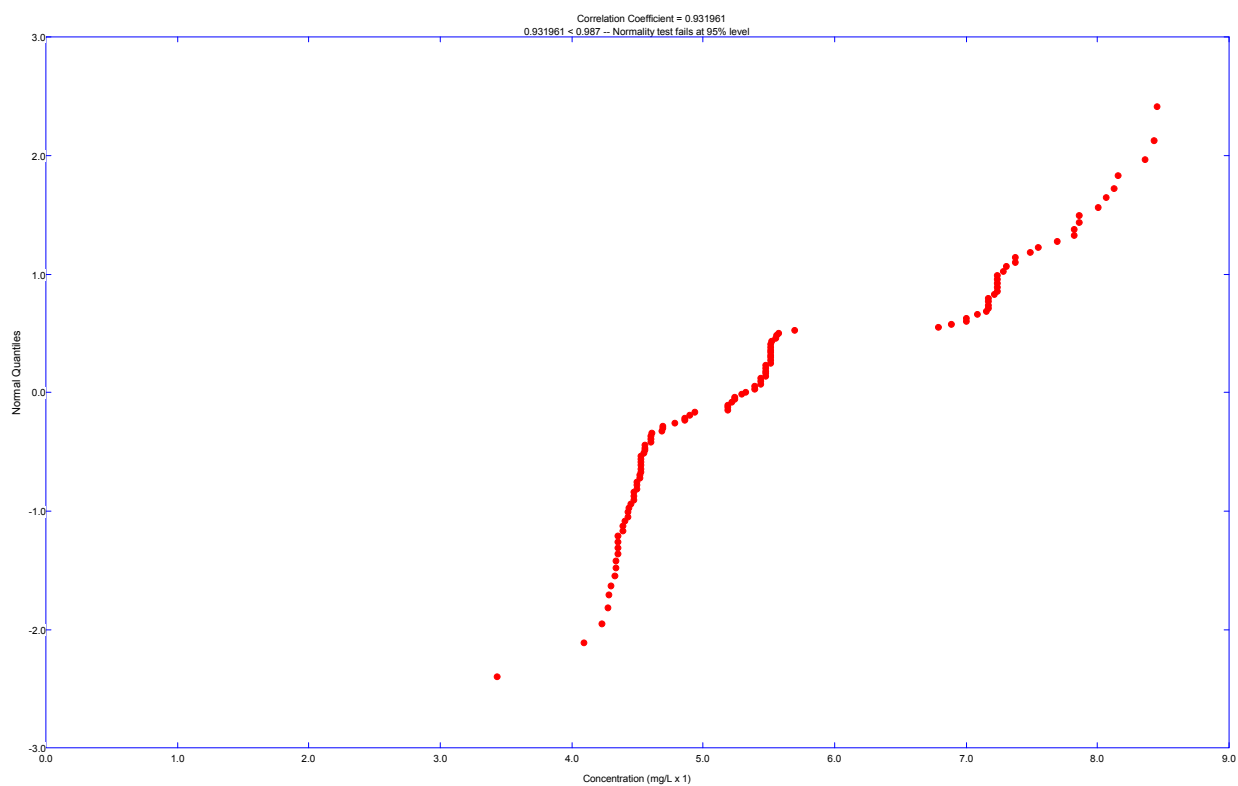


Figure C-19. Probability Plot - Dissolved Sulfate, Square-root Transformation

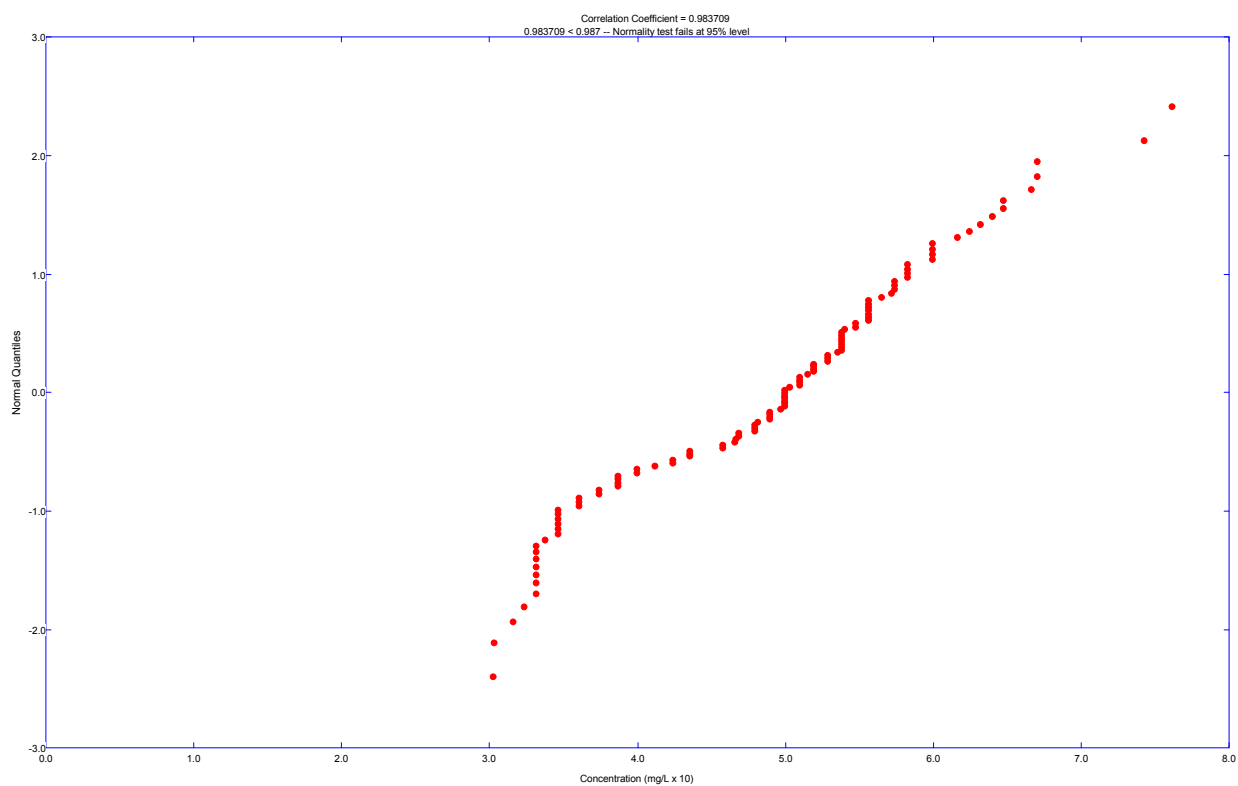


Figure C-20. Probability Plot - Total Dissolved Solids, Logarithmic Transformation

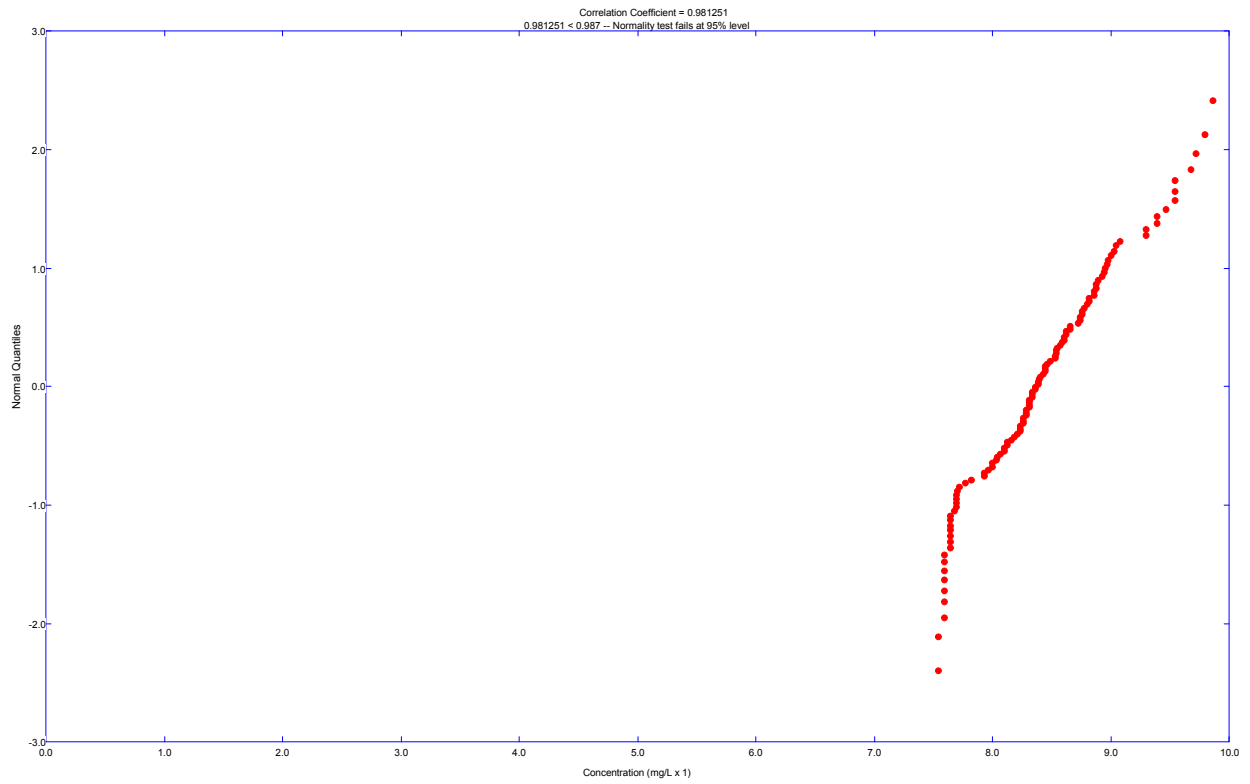


Figure C-21. Probability Plot - Total Dissolved Solids, MW-17 Omitted, Logarithmic Transformation

