



DEPARTMENT OF NATURAL RESOURCES

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July 24, 2012

Certified Mail Return Receipt 7011 3500 0001 3136 7448

Ms. Janice Hunt
3531 CR 331
Silt, CO 81652

Re: Encana NOAV 200355205 – Davis Ditch Release
Complaint #200353851
Baseline Water Sample Laboratory Report
Facility ID 429610
NWSW Section 27 6S 92W
TestAmerica Laboratory Work Order 280-30378-1

30333

Dear Ms. Hunt,

Enclosed is the laboratory analysis report for the water sample Craig Heydenberk collected on behalf of The Colorado Oil and Gas Conservation Commission (COGCC) from your cistern on 6-21-2012. A summary table containing laboratory results from three samples previously collected from your cistern, the current cistern sample and CDPHE standards for reference is included in Attachment 1. The attached table identifies the naturally occurring constituents that are present above the drinking water guidelines and I have also noted the constituents that are present above agricultural guidelines. I have copied the pages of the report that present your cistern sample results and placed them behind this letter in Attachment 2, for your convenience. The remainder of the complete laboratory report, which includes laboratory quality control samples, is included as Attachment 3.

Additionally, I've entered the sample results into a tool developed by Colorado State University Extension Service in conjunction with other agencies for analyzing drinking water. Results of this tool comparing your water results to drinking water standards, irrigation water standards and livestock water standards are included in this packet for the baseline sample as Attachments 4. Based on my initial evaluation the baseline sample results do not show an impact to your cistern from oil and gas activities in your area. You told me that the cistern water is not used for drinking but is used for bathing.

DEPARTMENT OF NATURAL RESOURCES: Mike King, Executive Director

COGCC COMMISSION: Richard Alward – John Benton – Thomas L. Compton – DeAnn Craig – Tommy Holton – W. Perry Pearce – Andrew Spielman – Mike King – Chris Urbina
COGCC STAFF: Thom Kerr, Acting Director – Margaret Ash, Field Inspection Manager – Karen Spray, Acting Environmental Manager – Stuart Ellsworth, Engineering Manager

Encana has also collected samples from your cistern in 2012 but I have not received results from those samples at this time. When I receive the results from the Encana samples, I will include them in my analysis to determine if your cistern was impacted by the release to the Davis Ditch after the baseline sample was collected and infiltration to the aquifer occurred.

The COGCC will prepare an interpretive letter evaluating the water quality identified by the baseline sampling results and a comparison of baseline results to sample results collected from your cistern as required by the NOAV written to Encana. We will be analyzing your cistern data closely and will generate a letter discussing all the various constituents reported by the laboratory and what the concentrations, if any, identified in the water sample mean.

Thank you for your patience.

Sincerely,

Linda Spry O'Rourke
Environmental Protection Specialist II, NW Region
970-625-2497 ext. 7
linda.spryorourk@state.co.us

encl.: TestAmerica Laboratory Work Order 280-30378-1

cc: Thom Kerr, Acting COGCC Directory, w/o attachments,
Karen Spray, Acting COGCC Environmental Protection Manager
Alex Fischer, COGCC Environmental Protection Supervisor
Kathy Friesen, Encana Environmental Manager

Attachments:

- Attachment 1 - Table 1 - Analytical Summary
- Attachment 2 – TestAmerica Laboratory Well Sample Data Reports
- Attachment 3 – TestAmerica Laboratory Well Sample Quality Control
Sample Data Reports
- Attachment 4 – CSU Tool Evaluation – Hunt Baseline Cistern Water Sample

Attachment 1

Table 1 ANALYTICAL SUMMARY
Hunt Cistern/Spring
NOAV 200355205

Parameter	Cistern Water Sample	Cistern Water Sample	Cistern Water Sample	Cistern Water Sample		CDPHE Standards		
	Sample Date 19-Mar-2003	Sample Date 2-Sep-2004	Sample Date 8-Jul-2008	Sample Date 21-Jun-2012				
	Result	Result	Result	Result	Unit	Domestic	Agriculture	Units
Aluminum	NA	NA	NA	ND(0.018)	mg/l	0.05	NS	mg/l
Antimony	NA	NA	NA	0.00024J	mg/l	0.006	NS	mg/l
Arsenic	NA	NA	NA	0.002J	mg/l	0.01	0.1	mg/l
Barium	NA	NA	NA	0.021	mg/l	2.0	NS	mg/l
Beryllium	NA	NA	NA	ND (0.00047)	mg/l	0.004	0.1	mg/l
Boron	NA	NA	NA	0.48	mg/l	NS	0.75	mg/l
Cadmium	NA	NA	NA	ND (0.00004)	mg/l	0.005	0.01	mg/l
Calcium	170	74	92	110	mg/l	NS	NS	
Chromium	NA	NA	NA	ND (0.00066)	mg/l	0.1	0.1	mg/l
Cobalt	NA	NA	NA	0.0005J	mg/l	NS	0.05	mg/l
Copper	NA	NA	NA	0.0019J	mg/l	1	0.2	mg/l
Iron	0.46	NA	54	ND (0.022)	mg/l	0.3	5	mg/l
Lead	NA	NA	NA	ND (0.00010)	mg/l	0.05	0.1	mg/l
Lithium	NA	NA	NA	0.1	mg/l	NS	2.5	mg/l
Magnesium	160	99	76	100	mg/l	NS	NS	
Manganese	0.033	NA	5.3	0.92	mg/l	0.05	0.2	mg/l
Mercury	NA	NA	NA	0.000031JB	mg/l	0.002	0.01	mg/l
Molybdenum	NA	NA	NA	0.0024B	mg/l	0.035	NS	mg/l
Nickel	NA	NA	NA	3.8J	mg/l	0.1	0.2	mg/l
Potassium	8.3	4.4	5.2	5.1	mg/l	NS	NS	
Selenium	0.034	0.033	ND (NR)	0.071	mg/l	0.05	0.02	mg/l
Silicon	NA	NA	NA	6.2	mg/l	NS	NS	
Silver	NA	NA	NA	0.000045JB	mg/l	0.05	NS	mg/l
Sodium	1200	400	290	1200	mg/l	NS	NS	

Table 1 ANALYTICAL SUMMARY
Hunt Cistern/Spring
NOAV 200355205

Parameter	Cistern Water Sample	Cistern Water Sample	Cistern Water Sample	Cistern Water Sample		CDPHE Standards		
	Sample Date 19-Mar-2003	Sample Date 2-Sep-2004	Sample Date 8-Jul-2008	Sample Date 21-Jun-2012				
	Result	Result	Result	Result	Unit	Domestic	Agriculture	Units
Strontium	NA	NA	NA	3.5	mg/l	NS	NS	
Thallium	NA	NA	NA	ND (0.000066)	mg/l	0.002	NS	mg/l
Uranium	NA	NA	NA	0.053	mg/l	0.03	NS	mg/l
Vanadium	NA	NA	NA	0.0016J	mg/l	NS	0.1	mg/l
Zinc	NA	NA	NA	8.5J	mg/l	5	2	mg/l
Nitrite	0.17	NA	ND (0.1)	ND (0.25)	mg/l	1.0	10	mg/l
Nitrate	1.85	NA	ND (0.1)	1.3J	mg/l	10.0	100	mg/l
Total Nitrite/Nitrate	2.02	NA	ND (0.2)	1.55	mg/l	10.0	100	mg/l
Sulfate	2620	1000	460	2700	mg/l	250	NS	mg/l
Chloride	235	35	32	440	mg/l	250	NS	mg/l
Fluoride	1.7	1.6	0.32	1.9J	mg/l	4.0	2	mg/l
Bromide	NA	NA	ND (1)	2.9	mg/l	NS	NS	
pH	NA	NA	NA	7.47HF	No units	6.5 - 8.5	6.5 - 8.5	No units
Total Dissolved Solids	4880	1700	910	4900	mg/l	400	*1500	mg/l
Total Alkalinity	563	590	NA	640	mg/l	NS	NS	
Bicarbonate	563	590	NA	640	mg/l	NS	NS	
Carbonate	ND (5)	ND (NR)	NA	ND (1.1)	mg/l	NS	NS	
Hydroxide Alkalinity	NA	NA	NA	ND (1.1)	mg/l	NS	NS	
Specific Conductivity	NA	NA	NA	6800	umhos/cm	NS	NS	
Sodium Adsorption Ratio	NA	NA	NA	20	ratio	NS	NS	
Methane	0.0015	NA	ND (0.01)	0.011	mg/l	NS	NS	
Ethane	NA	NA	NA	ND (0.0003)	mg/l	NS	NS	
Propane	NA	NA	NA	ND (0.00075)	mg/l	NS	NS	
Benzene	ND (0.001)	NA	ND (0.001)	ND (0.00016)	mg/l	0.005	NS	mg/l

Table 1 ANALYTICAL SUMMARY
Hunt Cistern/Spring
NOAV 200355205

Parameter	Cistern Water Sample	Cistern Water Sample	Cistern Water Sample	Cistern Water Sample		CDPHE Standards		
	Sample Date	Sample Date	Sample Date	Sample Date				
	19-Mar-2003	2-Sep-2004	8-Jul-2008	21-Jun-2012				
	Result	Result	Result	Result	Unit	Domestic	Agriculture	Units
Toluene	ND (0.002)	NA	ND (0.005)	ND (0.00017)	mg/l	0.56	NS	mg/l
Ethylbenzene	ND (0.002)	NA	ND (0.001)	ND (0.00016)	mg/l	0.7	NS	mg/l
Total Xylenes	ND (0.002)	NA	ND (0.003)	ND (0.00019)	mg/l	1.4	NS	mg/l
MTBE	ND (0.002)	NA	ND (0.001)	ND (0.00025)	mg/l	NS	NS	
Methylene Chloride	NA	NA	NA	0.00049JB	mg/l			
GRO	NA	NA	NA	ND (0.010)	mg/l	NS	NS	
DRO	NA	NA	NA	0.066J	mg/l	NS	NS	
Total Organic Carbon	NA	NA	NA	20B	mg/l	NS	NS	

Notes

CDPHE	Colorado Department of Public Health and the Environment.
Domestic	Water Quality Control Comm. 5 CCR 1002-41, Reg. No. 41 - The Basic Standards For Groundwater; Nov. 2009.
Agriculture	* Standards for agriculture compiled from CDPHE and other sources.
mg/l	milligrams per liter (ppm or parts per million) equals 1000 ug/l (micrograms per liter, ppb or parts per billion)
µmhos/cm	micromhos per centimeter
NA	Not analyzed.
ND (0.000)	Not detected, detection limit in parenthesis.
NS	No Standard.
NR	Detection Limit not recorded
	Human health standard or value above standard.
	Secondary standard or value above standard.
	CDPHE basic ground water standard or value above standard.
	Value above agricultural standard.

Attachment 2

SAMPLE SUMMARY

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-30333-1	HUNT CISTERN	Water	06/21/2012 1115	06/22/2012 0930

EXECUTIVE SUMMARY - Detections

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
280-30333-1	HUNT CISTERN					
Methylene Chloride		0.49	J B	2.0	ug/L	8260B
Methane		11		1.0	ug/L	RSK-175
C10-C36		0.066	J	0.47	mg/L	8015B
Sodium Adsorption Ratio		20		0.40	No Unit	20B
Bromide		2.9		1.0	mg/L	300.0
Nitrate as N		1.3	J	2.5	mg/L	300.0
Chloride		440		30	mg/L	300.0
Fluoride		1.9	J	2.5	mg/L	300.0
Sulfate		2700		500	mg/L	300.0
Total Alkalinity		640		5.0	mg/L	SM 2320B
Bicarbonate Alkalinity as CaCO3		640		5.0	mg/L	SM 2320B
Specific Conductance		6800		2.0	umhos/cm	SM 2510B
Total Dissolved Solids		4900		100	mg/L	SM 2540C
pH		7.47	HF	0.100	SU	SM 4500 H+ B
Total Organic Carbon - Average		20	B	1.0	mg/L	SM 5310B
<i>Dissolved</i>						
Boron		480		100	ug/L	200.7 Rev 4.4
Calcium		110000		200	ug/L	200.7 Rev 4.4
Lithium		100		10	ug/L	200.7 Rev 4.4
Magnesium		100000		200	ug/L	200.7 Rev 4.4
Nickel		3.8	J	40	ug/L	200.7 Rev 4.4
Potassium		5100		3000	ug/L	200.7 Rev 4.4
Silicon		6200		500	ug/L	200.7 Rev 4.4
Sodium		1200000		5000	ug/L	200.7 Rev 4.4
Strontium		3500		10	ug/L	200.7 Rev 4.4
Vanadium		1.6	J	10	ug/L	200.7 Rev 4.4
Zinc		8.5	J	20	ug/L	200.7 Rev 4.4
Antimony		0.24	J	2.0	ug/L	200.8
Arsenic		2.0	J	5.0	ug/L	200.8
Barium		21		1.0	ug/L	200.8
Cobalt		0.50	J	1.0	ug/L	200.8
Copper		1.9	J	2.0	ug/L	200.8
Manganese		920		2.0	ug/L	200.8
Molybdenum		24	B	2.0	ug/L	200.8
Selenium		71		5.0	ug/L	200.8
Silver		0.045	J B	1.0	ug/L	200.8
Uranium		53		1.0	ug/L	200.8
Mercury		0.031	J B	0.20	ug/L	245.1

Analytical Data

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-126426	Instrument ID:	MSV_P
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	P9189.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	06/30/2012 0216			Final Weight/Volume:	20 mL
Prep Date:	06/30/2012 0216				

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,1,1,2-Tetrachloroethane	ND		0.21	1.0
1,1,1-Trichloroethane	ND		0.16	1.0
1,1,2,2-Tetrachloroethane	ND		0.21	1.0
1,1,2-Trichloroethane	ND		0.27	1.0
1,1-Dichloroethane	ND		0.22	1.0
1,1-Dichloroethene	ND		0.23	1.0
1,1-Dichloropropene	ND		0.19	1.0
1,2,3-Trichlorobenzene	ND		0.21	1.0
1,2,3-Trichloropropane	ND		0.33	2.5
1,2,4-Trichlorobenzene	ND		0.21	1.0
1,2,4-Trimethylbenzene	ND		0.15	1.0
1,2-Dibromo-3-Chloropropane	ND		0.47	5.0
1,2-Dibromoethane	ND		0.18	1.0
1,2-Dichlorobenzene	ND		0.15	1.0
1,2-Dichloroethane	ND		0.13	1.0
1,2-Dichloroethene, Total	ND		0.24	1.0
1,2-Dichloropropane	ND		0.18	1.0
1,3,5-Trimethylbenzene	ND		0.16	1.0
1,3-Dichlorobenzene	ND		0.13	1.0
1,3-Dichloropropane	ND		0.22	1.0
1,4-Dichlorobenzene	ND		0.16	1.0
2,2-Dichloropropane	ND		0.18	1.0
2-Butanone (MEK)	ND		2.0	6.0
2-Chlorotoluene	ND		0.17	1.0
2-Hexanone	ND		1.7	5.0
4-Chlorotoluene	ND		0.21	1.0
4-Isopropyltoluene	ND		0.20	1.0
4-Methyl-2-pentanone (MIBK)	ND		0.98	5.0
Acetone	ND		1.9	10
Benzene	ND		0.16	1.0
Bromobenzene	ND		0.17	1.0
Bromoform	ND		0.19	1.0
Bromomethane	ND		0.21	2.0
Carbon tetrachloride	ND		0.19	1.0
Chlorobenzene	ND		0.17	1.0
Chlorobromomethane	ND		0.10	1.0
Chlorodibromomethane	ND		0.17	1.0
Chloroethane	ND		0.41	2.0
Chloroform	ND		0.16	1.0
Chloromethane	ND		0.30	2.0
cis-1,2-Dichloroethene	ND		0.15	1.0
cis-1,3-Dichloropropene	ND		0.16	1.0
Dibromomethane	ND		0.17	1.0
Dichlorobromomethane	ND		0.17	1.0
Dichlorodifluoromethane	ND		0.31	2.0
Ethylbenzene	ND		0.16	1.0

Analytical Data

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-126426	Instrument ID:	MSV_P
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	P9189.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	06/30/2012 0216			Final Weight/Volume:	20 mL
Prep Date:	06/30/2012 0216				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Hexachlorobutadiene	ND		0.36	1.0
Isopropylbenzene	ND		0.19	1.0
Methyl tert-butyl ether	ND		0.25	5.0
Methylene Chloride	0.49	J B	0.32	2.0
m-Xylene & p-Xylene	ND		0.34	2.0
Naphthalene	ND		0.22	1.0
n-Butylbenzene	ND		0.32	1.0
N-Propylbenzene	ND		0.16	1.0
o-Xylene	ND		0.19	1.0
sec-Butylbenzene	ND		0.17	1.0
Styrene	ND		0.17	1.0
tert-Butylbenzene	ND		0.16	1.0
Tetrachloroethene	ND		0.20	1.0
Toluene	ND		0.17	1.0
trans-1,2-Dichloroethene	ND		0.15	1.0
trans-1,3-Dichloropropene	ND		0.19	3.0
Trichloroethene	ND		0.16	1.0
Trichlorofluoromethane	ND		0.29	2.0
Vinyl chloride	ND		0.10	1.0
Xylenes, Total	ND		0.19	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	90		70 - 127
4-Bromofluorobenzene (Surr)	110		78 - 120
Dibromofluoromethane (Surr)	98		77 - 120
Toluene-d8 (Surr)	102		80 - 125

Analytical Data

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-126328	Instrument ID:	MSS_Y
Prep Method:	3520C	Prep Batch:	280-125241	Lab File ID:	Y8518.D
Dilution:	1.0			Initial Weight/Volume:	1056.5 mL
Analysis Date:	06/29/2012 1454			Final Weight/Volume:	1000 uL
Prep Date:	06/22/2012 1420			Injection Volume:	0.5 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
2,2'-oxybis[1-chloropropane]	ND		0.27	9.5
2,4,5-Trichlorophenol	ND		0.43	9.5
2,4,6-Trichlorophenol	ND		0.27	9.5
2,4-Dichlorophenol	ND		0.61	9.5
2,4-Dimethylphenol	ND		0.55	9.5
2,4-Dinitrophenol	ND		9.5	28
2,4-Dinitrotoluene	ND		1.6	9.5
2,6-Dinitrotoluene	ND		1.8	9.5
2-Chloronaphthalene	ND		0.25	3.8
2-Chlorophenol	ND		1.9	9.5
2-Methylnaphthalene	ND		0.27	3.8
2-Methylphenol	ND		0.93	9.5
2-Nitroaniline	ND		1.6	9.5
2-Nitrophenol	ND		0.37	9.5
3 & 4 Methylphenol	ND		0.24	9.5
3,3'-Dichlorobenzidine	ND		1.9	47
3-Nitroaniline	ND		1.9	9.5
4,6-Dinitro-2-methylphenol	ND		3.8	47
4-Bromophenyl phenyl ether	ND		0.41	9.5
4-Chloro-3-methylphenol	ND		2.3	9.5
4-Chloroaniline	ND		2.0	9.5
4-Chlorophenyl phenyl ether	ND		1.6	9.5
4-Nitroaniline	ND		1.9	9.5
4-Nitrophenol	ND		1.2	9.5
Acenaphthene	ND		0.27	3.8
Acenaphthylene	ND		0.46	3.8
Acetophenone	ND		0.23	9.5
Anthracene	ND		0.40	3.8
Atrazine	ND		0.69	9.5
Benzidine	ND		47	95
Benzo[a]anthracene	ND		0.33	3.8
Benzo[a]pyrene	ND		0.29	3.8
Benzo[b]fluoranthene	ND		0.50	3.8
Benzo[g,h,i]perylene	ND		0.47	3.8
Benzo[k]fluoranthene	ND		0.44	3.8
Bis(2-chloroethoxy)methane	ND		0.92	9.5
Bis(2-chloroethyl)ether	ND		0.39	9.5
Bis(2-ethylhexyl) phthalate	ND		0.53	9.5
Butyl benzyl phthalate	ND		0.95	3.8
Caprolactam	ND		4.7	9.5
Carbazole	ND		0.41	3.8
Chrysene	ND		0.51	3.8
Cresols, Total	ND		0.24	9.5
Dibenz(a,h)anthracene	ND		0.48	3.8
Dibenzofuran	ND		0.27	3.8
Diethyl phthalate	ND		0.36	3.8

Analytical Data

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-126328	Instrument ID:	MSS_Y
Prep Method:	3520C	Prep Batch:	280-125241	Lab File ID:	Y8518.D
Dilution:	1.0			Initial Weight/Volume:	1056.5 mL
Analysis Date:	06/29/2012 1454			Final Weight/Volume:	1000 uL
Prep Date:	06/22/2012 1420			Injection Volume:	0.5 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Dimethyl phthalate	ND		0.20	3.8
Di-n-butyl phthalate	ND		1.1	3.8
Di-n-octyl phthalate	ND		0.33	3.8
Fluoranthene	ND		0.19	3.8
Fluorene	ND		0.29	3.8
Hexachlorobenzene	ND		0.62	9.5
Hexachlorobutadiene	ND		3.1	9.5
Hexachlorocyclopentadiene	ND		9.5	47
Hexachloroethane	ND		2.0	9.5
Indeno[1,2,3-cd]pyrene	ND		0.62	3.8
Naphthalene	ND		0.27	3.8
Nitrobenzene	ND		0.77	9.5
N-Nitrosodi-n-propylamine	ND		0.33	9.5
n-Nitrosodiphenylamine(as diphenylamine)	ND		0.42	9.5
Pentachlorophenol	ND		19	47
Phenanthrene	ND		0.25	3.8
Phenol	ND		1.9	9.5
Pyrene	ND		0.35	9.5

Surrogate	%Rec	Qualifier	Acceptance Limits
2,4,6-Tribromophenol	117		57 - 120
2-Fluorobiphenyl	89		38 - 120
2-Fluorophenol	88		51 - 120
Nitrobenzene-d5	92		48 - 120
Phenol-d5	93		51 - 120
Terphenyl-d14	105		50 - 120

Analytical Data

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

8015B Gasoline Range Organics - (GC)

Analysis Method:	8015B	Analysis Batch:	280-125437	Instrument ID:	GCV_B
Prep Method:	5030B		N/A	Initial Weight/Volume:	5 mL
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	06/22/2012 2339			Injection Volume:	5 mL
Prep Date:	06/22/2012 2339			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Gasoline Range Organics (GRO)-C6-C10	ND		10	25

Surrogate	%Rec	Qualifier	Acceptance Limits
a,a,a-Trifluorotoluene	90		82 - 110

Analytical Data

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

RSK-175 Dissolved Gases (GC)

Analysis Method: RSK-175

Analysis Batch: 600-83033

Instrument ID: FID14

N/A

N/A

Initial Weight/Volume: 1 mL

Dilution: 1.0

Final Weight/Volume: 1 mL

Analysis Date: 07/02/2012 1613

Injection Volume:

Prep Date: N/A

Result Type: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Ethane	ND		0.30	2.0
Methane	11		0.36	1.0
Propane	ND		0.75	2.0

Analytical Data

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

8015B Diesel Range Organics (DRO) (GC)

Analysis Method:	8015B	Analysis Batch:	280-125910	Instrument ID:	GCS_U2
Prep Method:	3510C	Prep Batch:	280-125259	Initial Weight/Volume:	1061.44 mL
Dilution:	1.0			Final Weight/Volume:	1000 uL
Analysis Date:	06/27/2012 1840			Injection Volume:	1 uL
Prep Date:	06/22/2012 1658			Result Type:	PRIMARY

Analyte	Result (mg/L)	Qualifier	MDL	RL
C10-C36	0.066	J	0.053	0.47

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	71		50 - 115
n-Octacosane	90		26 - 152

Analytical Data

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

200.7 Rev 4.4 Metals (ICP)-Dissolved

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	280-125764	Instrument ID:	MT_026
Prep Method:	200.7	Prep Batch:	280-125463	Lab File ID:	26A062612.asc
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	06/26/2012 2345			Final Weight/Volume:	50 mL
Prep Date:	06/26/2012 1400				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	ND		18	100
Beryllium	ND		0.47	1.0
Boron	480		4.4	100
Calcium	110000		35	200
Chromium	ND		0.66	10
Iron	ND		22	100
Lithium	100		2.6	10
Magnesium	100000		11	200
Nickel	3.8	J	1.3	40
Potassium	5100		240	3000
Silicon	6200		35	500
Sodium	1200000		92	5000
Strontium	3500		0.30	10
Vanadium	1.6	J	1.1	10
Zinc	8.5	J	4.5	20

200.8 Metals (ICP/MS)-Dissolved

Analysis Method:	200.8	Analysis Batch:	280-125775	Instrument ID:	MT_024
Prep Method:	200.8	Prep Batch:	280-125466	Lab File ID:	069SMPL.D
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	06/27/2012 0008			Final Weight/Volume:	50 mL
Prep Date:	06/26/2012 1400				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Antimony	0.24	J	0.16	2.0
Arsenic	2.0	J	0.50	5.0
Barium	21		0.38	1.0
Cadmium	ND		0.040	1.0
Cobalt	0.50	J	0.050	1.0
Copper	1.9	J	0.20	2.0
Lead	ND		0.10	1.0
Manganese	920		0.51	2.0
Molybdenum	24	B	0.040	2.0
Selenium	71		1.0	5.0
Silver	0.045	J B	0.020	1.0
Thallium	ND		0.066	1.0
Uranium	53		0.030	1.0

20B Sodium Adsorption Ratio

Analytical Data

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

20B Sodium Adsorption Ratio

Analysis Method:	20B	Analysis Batch:	280-125550	Instrument ID:	MT_025
	N/A		N/A	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	
Analysis Date:	06/26/2012 0710			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (No Unit)	Qualifier	MDL	RL
Sodium Adsorption Ratio	20		0.40	0.40

245.1 Mercury (CVAA)-Dissolved

Analysis Method:	245.1	Analysis Batch:	280-125577	Instrument ID:	MT_033
Prep Method:	245.1	Prep Batch:	280-125255	Lab File ID:	120625aa.txt
Dilution:	1.0			Initial Weight/Volume:	30 mL
Analysis Date:	06/25/2012 1449			Final Weight/Volume:	30 mL
Prep Date:	06/25/2012 1200				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.031	J B	0.027	0.20

Analytical Data

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

General Chemistry

Client Sample ID: HUNT CISTERN

Lab Sample ID: 280-30333-1

Date Sampled: 06/21/2012 1115

Client Matrix: Water

Date Received: 06/22/2012 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Bromide	2.9		mg/L	0.57	1.0	5.0	300.0
	Analysis Batch: 280-125495	Analysis Date: 06/22/2012 1600					
Nitrate as N	1.3	J	mg/L	0.21	2.5	5.0	300.0
	Analysis Batch: 280-125489	Analysis Date: 06/22/2012 1600					
Chloride	440		mg/L	2.5	30	10	300.0
	Analysis Batch: 280-125495	Analysis Date: 06/22/2012 1945					
Nitrite as N	ND		mg/L	0.25	2.5	5.0	300.0
	Analysis Batch: 280-125489	Analysis Date: 06/22/2012 1600					
Fluoride	1.9	J	mg/L	0.30	2.5	5.0	300.0
	Analysis Batch: 280-125495	Analysis Date: 06/22/2012 1600					
Sulfate	2700		mg/L	23	500	100	300.0
	Analysis Batch: 280-125495	Analysis Date: 06/22/2012 2002					
Total Alkalinity	640		mg/L	1.1	5.0	1.0	SM 2320B
	Analysis Batch: 280-125394	Analysis Date: 06/23/2012 0849					
Bicarbonate Alkalinity as CaCO3	640		mg/L	1.1	5.0	1.0	SM 2320B
	Analysis Batch: 280-125394	Analysis Date: 06/23/2012 0849					
Carbonate Alkalinity as CaCO3	ND		mg/L	1.1	5.0	1.0	SM 2320B
	Analysis Batch: 280-125394	Analysis Date: 06/23/2012 0849					
Hydroxide Alkalinity	ND		mg/L	1.1	5.0	1.0	SM 2320B
	Analysis Batch: 280-125394	Analysis Date: 06/23/2012 0849					
Specific Conductance	6800		umhos/cm	2.0	2.0	1.0	SM 2510B
	Analysis Batch: 280-125960	Analysis Date: 06/28/2012 1108					
Total Dissolved Solids	4900		mg/L	47	100	1.0	SM 2540C
	Analysis Batch: 280-125751	Analysis Date: 06/27/2012 0819					
pH	7.47	HF	SU	0.100	0.100	1.0	SM 4500 H+ B
	Analysis Batch: 280-125326	Analysis Date: 06/23/2012 1208					
Total Organic Carbon - Average	20	B	mg/L	0.16	1.0	1.0	SM 5310B
	Analysis Batch: 280-126107	Analysis Date: 06/28/2012 0641					

Attachment 3

ANALYTICAL REPORT

Job Number: 280-30333-1

Job Description: Hunt Residence Silt, CO

For:
Colorado Oil&Gas Conservation Commision
707 Wapiti Court
Suite 204
Rifle, CO 81650
Attention: Linda Spry O'Rourke



Approved for release.
Joseph J Egry
Project Manager I
7/13/2012 10:14 AM

Joseph J Egry
Project Manager I
joseph.egry@testamericainc.com
07/13/2012

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is E87667.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

TestAmerica Laboratories, Inc.

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CASE NARRATIVE

Client: Colorado Oil & Gas Conservation Commission

Project: Hunt Residence Silt, CO

Report Number: 280-30333-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 06/22/2012; the samples arrived in good condition, properly preserved, and on ice. The temperature of the coolers at receipt was 4.7°C.

The results for the RSK-175 analysis, SW846 8015B, are included in this report and were performed by TestAmerica Houston: 6310 Rothway Street; Houston, TX 77040: Phone: 713.690.4444.

The sample collection time was not listed on the Chain of Custody. The sample was logged per the time listed on the container labels. The client was notified 6/22/2012.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample HUNT CISTERN (280-30333-1) was analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/30/2012.

Methylene Chloride was detected in method blank MB 280-126426/6 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged.

No other difficulties were encountered during the volatiles analysis.

All other quality control parameters were within the acceptance limits.

SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample HUNT CISTERN (280-30333-1) was analyzed for semivolatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8270C. The samples were prepared on 06/22/2012 and analyzed on 06/29/2012.

2,4,6-Tribromophenol failed the surrogate recovery criteria high for LCS 280-125241/2-A. All spike compounds were within control limits in both this LCS and the LCSD, therefore the data will be reported.

Insufficient sample volume was available to perform batch matrix spike/matrix spike duplicate (MS/MSD) associated with batch 125241 8270/3520. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No other difficulties were encountered during the SVOC analysis.

All other quality control parameters were within the acceptance limits.

GAS RANGE ORGANICS

Sample HUNT CISTERN (280-30333-1) was analyzed for gas range organics in accordance with EPA SW-846 Method 8015B - GRO. The samples were analyzed on 06/22/2012.

a,a,a-Trifluorotoluene failed the surrogate recovery criteria high for 280-30303-U-3 MS and 280-30303-U-3 MSD. Evidence of matrix interference is present due to the shapes of the a,a,a-Trifluorotoluene peak, which indicate that some target analyte co-eluted with a,a,a-Trifluorotoluene; therefore, re-analysis was not performed.

No other difficulties were encountered during the GRO analysis.

All other quality control parameters were within the acceptance limits.

DISSOLVED GASES

Sample HUNT CISTERN (280-30333-1) was analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 07/02/2012.

No difficulties were encountered during the dissolved gases analysis.

All quality control parameters were within the acceptance limits.

DIESEL RANGE ORGANICS

Sample HUNT CISTERN (280-30333-1) was analyzed for Diesel Range Organics in accordance with EPA SW-846 Method 8015B - DRO. The samples were prepared on 06/22/2012 and analyzed on 06/27/2012.

It is the laboratory's standard procedure to aliquot aqueous samples gravimetrically assuming a density of 1.0g/mL. The density of the following sample was greater than 1.0g/mL: HUNT CISTERN (280-30333-1). The weight of the sample aliquot was divided by the density of the sample to calculate the volume of the sample extracted.

No difficulties were encountered during the DRO analysis.

All quality control parameters were within the acceptance limits.

DISSOLVED METALS (ICP)

Sample HUNT CISTERN (280-30333-1) was analyzed for dissolved metals (ICP) in accordance with EPA Method 200.7. The samples were prepared and analyzed on 06/26/2012.

Sodium failed the recovery criteria low for the MS and MSD of sample HUNT CISTERN (280-30333-1) in batch 280-125764. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other difficulties were encountered during the metals analysis.

All other quality control parameters were within the acceptance limits.

DISSOLVED METALS (ICPMS)

Sample HUNT CISTERN (280-30333-1) was analyzed for dissolved metals (ICPMS) in accordance with EPA Method 200.8. The samples were prepared on 06/26/2012 and analyzed on 06/27/2012.

Molybdenum and Silver were detected in method blank MB 280-125420/1-B at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged.

Cobalt and Copper failed the recovery criteria low for the MS and MSD of sample 280-30378-1 in batch 280-125775. The associated laboratory control sample (LCS) recoveries met acceptance criteria.

No other difficulties were encountered during the dissolved metals analysis.

All other quality control parameters were within the acceptance limits.

DISSOLVED MERCURY (CVAA)

Sample HUNT CISTERN (280-30333-1) was analyzed for dissolved mercury (CVAA) in accordance with EPA Method 245.1. The samples were prepared and analyzed on 06/25/2012.

Mercury was detected in method blank MB 280-125231/1-B at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged.

No other difficulties were encountered during the dissolved mercury analysis.

All other quality control parameters were within the acceptance limits.

SODIUM ABSORPTION RATIO

Sample HUNT CISTERN (280-30333-1) was analyzed for Sodium Absorption Ratio in accordance with USDA Handbook 60 - 20B. The samples were analyzed on 06/26/2012.

No difficulties were encountered during the SAR analysis.

All quality control parameters were within the acceptance limits.

ALKALINITY

Sample HUNT CISTERN (280-30333-1) was analyzed for Alkalinity in accordance with SM20 2320B. The samples were analyzed on

06/23/2012.

No difficulties were encountered during the alkalinity analysis.

All quality control parameters were within the acceptance limits.

SPECIFIC CONDUCTIVITY

Sample HUNT CISTERN (280-30333-1) was analyzed for specific conductivity in accordance with SM20 2510B. The samples were analyzed on 06/28/2012.

No difficulties were encountered during the conductivity analysis.

All quality control parameters were within the acceptance limits.

TOTAL DISSOLVED SOLIDS

Sample HUNT CISTERN (280-30333-1) was analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 06/27/2012.

No difficulties were encountered during the TDS analysis.

All quality control parameters were within the acceptance limits.

ANIONS (28 DAYS)

Sample HUNT CISTERN (280-30333-1) was analyzed for anions (28 days) in accordance with EPA Method 300.0. The samples were analyzed on 06/22/2012.

Fluoride failed the recovery criteria low for the MS and MSD of sample 280-30331-4 in batch 280-125495. The associated laboratory control sample (LCS/LCSD) recovery met acceptance criteria. The presence of the '4' qualifier in the report indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Samples HUNT CISTERN (280-30333-1) [10X], HUNT CISTERN (280-30333-1) [100X], and HUNT CISTERN (280-30333-1) [5X] required dilution prior to analysis due to matrix. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the anions analysis.

All other quality control parameters were within the acceptance limits.

ANIONS (48 HOURS)

Sample HUNT CISTERN (280-30333-1) was analyzed for anions (48 hours) in accordance with EPA Method 300.0. The samples were analyzed on 06/22/2012.

Sample HUNT CISTERN (280-30333-1) [5X] required dilution prior to analysis due to matrix. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analysis.

All quality control parameters were within the acceptance limits.

CORROSIVITY (PH)

Sample HUNT CISTERN (280-30333-1) was analyzed for corrosivity (pH) in accordance with SM20 4500 H+ B. The samples were analyzed on 06/23/2012.

No difficulties were encountered during the pH analysis.

All other quality control parameters were within the acceptance limits.

TOTAL ORGANIC CARBON

Sample HUNT CISTERN (280-30333-1) was analyzed for total organic carbon in accordance with SM20 5310B. The samples were analyzed on 06/28/2012.

Total Organic Carbon - Average was detected in method blank MB 280-126107/25 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged.

No other difficulties were encountered during the TOC analysis.

All other quality control parameters were within the acceptance limits.

GASOLINE RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCV_B Analysis Batch Number: 112259Lab Sample ID: IC 280-112259/3 Client Sample ID: _____Date Analyzed: 03/14/12 09:46 Lab File ID: 116F0301.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1-Chloro-4-fluorobenzene	11.29	Baseline Event	mooret	03/19/12 11:26

Lab Sample ID: IC 280-112259/4 Client Sample ID: _____Date Analyzed: 03/14/12 10:19 Lab File ID: 202F0401.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1-Chloro-4-fluorobenzene	11.29	Baseline Event	mooret	03/19/12 11:27

Lab Sample ID: ICRT 280-112259/5 Client Sample ID: _____Date Analyzed: 03/14/12 12:03 Lab File ID: 203F0501.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.88	Baseline Event	mooret	03/19/12 11:24
1-Chloro-4-fluorobenzene	11.30	Baseline Event	mooret	03/19/12 11:24

Lab Sample ID: IC 280-112259/6 Client Sample ID: _____Date Analyzed: 03/14/12 12:34 Lab File ID: 204F0601.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.87	Baseline Event	mooret	03/19/12 11:27
1-Chloro-4-fluorobenzene	11.29	Baseline Event	mooret	03/19/12 11:27

GASOLINE RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCV_B Analysis Batch Number: 112259Lab Sample ID: IC 280-112259/7 Client Sample ID: _____Date Analyzed: 03/14/12 13:17 Lab File ID: 205F0701.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.89	Baseline Event	mooret	03/19/12 11:28
1-Chloro-4-fluorobenzene	11.30	Baseline Event	mooret	03/19/12 11:28

Lab Sample ID: IC 280-112259/8 Client Sample ID: _____Date Analyzed: 03/14/12 13:49 Lab File ID: 206F0801.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.88	Baseline Event	mooret	03/19/12 11:28
1-Chloro-4-fluorobenzene	11.30	Baseline Event	mooret	03/19/12 11:28

Lab Sample ID: ICV 280-112259/9 Client Sample ID: _____Date Analyzed: 03/14/12 14:26 Lab File ID: 207F0901.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.88	Baseline Event	mooret	03/19/12 11:31
C5-C12	9.62	Baseline Event	mooret	03/19/12 11:31
C6-C12	10.07	Baseline Event	mooret	03/19/12 11:31
Gasoline	10.07	Baseline Event	mooret	03/19/12 11:31
Chlorobenzene	11.51	Baseline Event	mooret	03/19/12 11:31

GASOLINE RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCV_B Analysis Batch Number: 125437Lab Sample ID: CCVRT 280-125437/2 Client Sample ID: _____Date Analyzed: 06/22/12 11:12 Lab File ID: 107F0201.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.85	Split Peak	byla	06/22/12 12:05
Gasoline Range Organics (GRO) -C6-C10	9.13	Baseline Event	byla	06/22/12 00:00
Chlorobenzene	11.47	Baseline Event	byla	06/22/12 12:05

Lab Sample ID: LCS 280-125437/3 Client Sample ID: _____Date Analyzed: 06/22/12 12:47 Lab File ID: 108F0301.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Gasoline Range Organics (GRO) -C6-C10	9.13	Baseline Event	byla	06/22/12 00:00

Lab Sample ID: LCSD 280-125437/4 Client Sample ID: _____Date Analyzed: 06/22/12 13:20 Lab File ID: 109F0401.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Gasoline Range Organics (GRO) -C6-C10	9.13	Baseline Event	byla	06/22/12 00:00

Lab Sample ID: 280-30303-U-3 MS Client Sample ID: _____Date Analyzed: 06/22/12 16:54 Lab File ID: 113F0801.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.88	Baseline Event	byla	06/23/12 12:40
Gasoline Range Organics (GRO) -C6-C10	9.13	Baseline Event	byla	06/23/12 00:00

GASOLINE RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCV_B Analysis Batch Number: 125437Lab Sample ID: 280-30303-U-3 MSD Client Sample ID: _____Date Analyzed: 06/22/12 17:28 Lab File ID: 114F0901.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.88	Baseline Event	byla	06/23/12 12:41
Gasoline Range Organics (GRO) -C6-C10	9.13	Baseline Event	byla	06/23/12 00:00

Lab Sample ID: CCV 280-125437/13 Client Sample ID: _____Date Analyzed: 06/22/12 19:46 Lab File ID: 202F1301.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.90	Split Peak	byla	06/23/12 12:37
Gasoline Range Organics (GRO) -C6-C10	9.13	Baseline Event	byla	06/23/12 00:00
Chlorobenzene	11.51	Baseline Event	byla	06/23/12 12:37

Lab Sample ID: CCV 280-125437/19 Client Sample ID: _____Date Analyzed: 06/23/12 00:12 Lab File ID: 210F2101.D GC Column: RTX 502.2 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
a,a,a-Trifluorotoluene	7.86	Split Peak	byla	06/23/12 12:38
Gasoline Range Organics (GRO) -C6-C10	9.13	Baseline Event	byla	06/23/12 00:00
Chlorobenzene	11.48	Baseline Event	byla	06/23/12 12:38

DIESEL RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCS_U2 Analysis Batch Number: 117292Lab Sample ID: IC 280-117292/2 Client Sample ID: _____Date Analyzed: 04/26/12 15:10 Lab File ID: 004F0401.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C22	6.49	Baseline Event	birdsellm	04/27/12 00:00
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:14
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:14
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 00:00
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:14
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:14
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:14

Lab Sample ID: IC 280-117292/3 Client Sample ID: _____Date Analyzed: 04/26/12 15:34 Lab File ID: 005F0501.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C22	6.49	Baseline Event	birdsellm	04/27/12 10:15
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:15
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:15
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 10:15
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:15
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:15
o-Terphenyl	8.22	Baseline Event	birdsellm	04/27/12 10:15
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:15
n-Octacosane	11.38	Baseline Event	birdsellm	04/27/12 10:15

DIESEL RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCS_U2 Analysis Batch Number: 117292Lab Sample ID: IC 280-117292/4 Client Sample ID: _____Date Analyzed: 04/26/12 15:58 Lab File ID: 006F0601.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C22	6.49	Baseline Event	birdsellm	04/27/12 10:15
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:15
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:15
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 10:15
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:15
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:15
o-Terphenyl	8.21	Baseline Event	birdsellm	04/27/12 10:15
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:15
n-Octacosane	11.38	Baseline Event	birdsellm	04/27/12 10:15

Lab Sample ID: ICRT 280-117292/5 Client Sample ID: _____Date Analyzed: 04/26/12 16:23 Lab File ID: 007F0701.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C22	6.49	Baseline Event	birdsellm	04/27/12 10:13
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:13
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:13
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 10:13
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:13
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:13
o-Terphenyl	8.21	Baseline Event	birdsellm	04/27/12 10:13
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:13
n-Octacosane	11.38	Baseline Event	birdsellm	04/27/12 10:13

DIESEL RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCS_U2 Analysis Batch Number: 117292Lab Sample ID: IC 280-117292/6 Client Sample ID: _____Date Analyzed: 04/26/12 16:47 Lab File ID: 008F0801.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C22	6.49	Baseline Event	birdsellm	04/27/12 10:16
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:16
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:16
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 10:16
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:16
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:16
o-Terphenyl	8.20	Baseline Event	birdsellm	04/27/12 10:16
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:16
n-Octacosane	11.38	Baseline Event	birdsellm	04/27/12 10:15

Lab Sample ID: IC 280-117292/7 Client Sample ID: _____Date Analyzed: 04/26/12 17:12 Lab File ID: 009F0901.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C22	6.49	Baseline Event	birdsellm	04/27/12 10:16
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:16
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:16
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 10:16
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:16
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:16
o-Terphenyl	8.20	Baseline Event	birdsellm	04/27/12 10:16
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:16

DIESEL RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCS_U2 Analysis Batch Number: 117292Lab Sample ID: IC 280-117292/8 Client Sample ID: _____Date Analyzed: 04/26/12 17:36 Lab File ID: 010F1001.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C22	6.49	Baseline Event	birdsellm	04/27/12 10:16
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:16
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:16
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 10:16
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:16
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:16
o-Terphenyl	8.20	Baseline Event	birdsellm	04/27/12 10:16
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:16

Lab Sample ID: ICV 280-117292/9 Client Sample ID: _____Date Analyzed: 04/26/12 18:01 Lab File ID: 011F1101.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
C10-C24	6.82	Baseline Event	birdsellm	04/27/12 10:19
C10-C25	6.98	Baseline Event	birdsellm	04/27/12 10:19
C8-C34	7.00	Baseline Event	birdsellm	04/27/12 10:19
Diesel Range Organics [C10-C28]	7.41	Baseline Event	birdsellm	04/27/12 10:19
C10-C32	7.94	Baseline Event	birdsellm	04/27/12 10:19
o-Terphenyl	8.20	Baseline Event	birdsellm	04/27/12 10:18
C10-C36	8.40	Baseline Event	birdsellm	04/27/12 10:19
n-Octacosane	11.37	Baseline Event	birdsellm	04/27/12 10:19

DIESEL RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCS_U2 Analysis Batch Number: 125910Lab Sample ID: CCVRT 280-125910/2 Client Sample ID: _____Date Analyzed: 06/27/12 14:36 Lab File ID: 004F0401.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Diesel Range Organics [C10-C28]	7.38	Baseline Event	pavlakoa	06/27/12 16:12
o-Terphenyl	8.18	Baseline Event	pavlakoa	06/27/12 16:12
C10-C36	8.37	Baseline Event	pavlakoa	06/27/12 16:12
n-Octacosane	11.35	Baseline Event	pavlakoa	06/27/12 16:12

Lab Sample ID: LCS 280-125259/2-A Client Sample ID: _____Date Analyzed: 06/27/12 15:49 Lab File ID: 007F0701.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
o-Terphenyl	8.18	Baseline Event	pavlakoa	06/28/12 08:30
C10-C36	8.37	Baseline Event	pavlakoa	06/28/12 08:30
n-Octacosane	11.35	Baseline Event	pavlakoa	06/28/12 08:30

Lab Sample ID: LCSD 280-125259/3-A Client Sample ID: _____Date Analyzed: 06/27/12 16:13 Lab File ID: 008F0801.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
o-Terphenyl	8.18	Baseline Event	pavlakoa	06/28/12 08:31
C10-C36	8.37	Baseline Event	pavlakoa	06/28/12 08:31
n-Octacosane	11.35	Baseline Event	pavlakoa	06/28/12 08:31

DIESEL RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCS_U2 Analysis Batch Number: 125910Lab Sample ID: 280-30303-D-3-A MS Client Sample ID: _____Date Analyzed: 06/27/12 17:27 Lab File ID: 011F1101.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
o-Terphenyl	8.17	Baseline Event	pavlakoa	06/28/12 08:32
C10-C36	8.37	Baseline Event	pavlakoa	06/28/12 08:32
n-Octacosane	11.35	Baseline Event	pavlakoa	06/28/12 08:32

Lab Sample ID: 280-30303-F-3-A MSD Client Sample ID: _____Date Analyzed: 06/27/12 17:51 Lab File ID: 012F1201.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
o-Terphenyl	8.18	Baseline Event	pavlakoa	06/28/12 08:33
C10-C36	8.37	Baseline Event	pavlakoa	06/28/12 08:33
n-Octacosane	11.35	Baseline Event	pavlakoa	06/28/12 08:33

Lab Sample ID: 280-30333-1 Client Sample ID: HUNT CISTERNDate Analyzed: 06/27/12 18:40 Lab File ID: 014F1401.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
o-Terphenyl	8.17	Baseline Event	pavlakoa	06/28/12 08:34
C10-C36	8.37	Baseline Event	pavlakoa	06/28/12 08:35
n-Octacosane	11.34	Baseline Event	pavlakoa	06/28/12 08:35

DIESEL RANGE ORGANICS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Instrument ID: GCS_U2 Analysis Batch Number: 125910Lab Sample ID: CCV 280-125910/18 Client Sample ID: _____Date Analyzed: 06/27/12 21:31 Lab File ID: 021F2101.D GC Column: RTX-1 (30.32) ID: 0.25 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Diesel Range Organics [C10-C28]	7.38	Baseline Event	pavlakoa	06/28/12 08:37
o-Terphenyl	8.18	Baseline Event	pavlakoa	06/28/12 08:37
C10-C36	8.37	Baseline Event	pavlakoa	06/28/12 08:37
n-Octacosane	11.35	Baseline Event	pavlakoa	06/28/12 08:37

GC VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Houston Job No.: 280-30333-1

SDG No.: _____

Instrument ID: FID14 Analysis Batch Number: 83033Lab Sample ID: CCVRT 600-83033/1 Client Sample ID: _____Date Analyzed: 07/02/12 14:22 Lab File ID: rsk070212_001.d GC Column: RTX-5 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methane	0.92	Peak Integrated Incorrectly	lamj	07/02/12 14:37
Ethane	1.10	Peak Integrated Incorrectly	lamj	07/02/12 14:37

Lab Sample ID: LCS 600-83033/3 Client Sample ID: _____Date Analyzed: 07/02/12 14:52 Lab File ID: rsk070212_003.d GC Column: RTX-5 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methane	0.90	Peak Integrated Incorrectly	lamj	07/02/12 15:03
Ethane	1.08	Peak Integrated Incorrectly	lamj	

Lab Sample ID: 280-30333-1 Client Sample ID: HUNT CISTERNDate Analyzed: 07/02/12 16:13 Lab File ID: rsk070212_008.d GC Column: RTX-5 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methane	0.90	Peak Integrated Incorrectly	lamj	07/03/12 15:57
Ethane	1.13	Peak Integrated Incorrectly	lamj	

Lab Sample ID: CCV 600-83033/12 Client Sample ID: _____Date Analyzed: 07/02/12 17:16 Lab File ID: rsk070212_012.d GC Column: RTX-5 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methane	0.92	Peak Integrated Incorrectly	lamj	07/02/12 17:26
Ethane	1.10	Peak Integrated Incorrectly	lamj	07/02/12 17:26

GC VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Houston Job No.: 280-30333-1

SDG No.: _____

Instrument ID: FID14 Analysis Batch Number: 83033Lab Sample ID: 280-30378-P-1 MS Client Sample ID: _____Date Analyzed: 07/02/12 17:29 Lab File ID: rsk070212_013.d GC Column: RTX-5 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methane	0.92	Peak Integrated Incorrectly	lamj	07/02/12 17:43
Ethane	1.10	Peak Integrated Incorrectly	lamj	07/02/12 17:43

Lab Sample ID: 280-30378-P-1 MSD Client Sample ID: _____Date Analyzed: 07/02/12 17:46 Lab File ID: rsk070212_014.d GC Column: RTX-5 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methane	0.92	Peak Integrated Incorrectly	lamj	07/02/12 17:55
Ethane	1.10	Peak Integrated Incorrectly	lamj	07/02/12 17:55

Lab Sample ID: CCV 600-83033/15 Client Sample ID: _____Date Analyzed: 07/02/12 18:10 Lab File ID: rsk070212_015.d GC Column: RTX-5 ID: 0.53 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Methane	0.92	Peak Integrated Incorrectly	lamj	07/02/12 18:20
Ethane	1.08	Peak Integrated Incorrectly	lamj	

METHOD SUMMARY

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds (GC/MS)	TAL DEN	SW846 8260B	
Purge and Trap	TAL DEN		SW846 5030B
Semivolatile Organic Compounds (GC/MS)	TAL DEN	SW846 8270C	
Liquid-Liquid Extraction (Continuous)	TAL DEN		SW846 3520C
Gasoline Range Organics - (GC)	TAL DEN	SW846 8015B	
Purge and Trap	TAL DEN		SW846 5030B
Diesel Range Organics (DRO) (GC)	TAL DEN	SW846 8015B	
Liquid-Liquid Extraction (Separatory Funnel)	TAL DEN		SW846 3510C
Metals (ICP)	TAL DEN	EPA 200.7 Rev 4.4	
Preparation, Total Recoverable Metals	TAL DEN		EPA 200.7
Sample Filtration	TAL DEN		FILTRATION
Metals (ICP/MS)	TAL DEN	EPA 200.8	
Preparation, Total Recoverable Metals	TAL DEN		EPA 200.8
Sample Filtration	TAL DEN		FILTRATION
Sodium Adsorption Ratio	TAL DEN	USDA 20B	
Mercury (CVAA)	TAL DEN	EPA 245.1	
Preparation, Mercury	TAL DEN		EPA 245.1
Sample Filtration	TAL DEN		FILTRATION
Anions, Ion Chromatography	TAL DEN	MCAWW 300.0	
Alkalinity	TAL DEN	SM SM 2320B	
Conductivity, Specific Conductance	TAL DEN	SM SM 2510B	
Solids, Total Dissolved (TDS)	TAL DEN	SM SM 2540C	
pH	TAL DEN	SM SM 4500 H+ B	
Organic Carbon, Total (TOC)	TAL DEN	SM SM 5310B	
Dissolved Gases (GC)	TAL HOU	RSK RSK-175	

Lab References:

TAL DEN = TestAmerica Denver

TAL HOU = TestAmerica Houston

Method References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

USDA = "USDA Agriculture Handbook 60, section 20B".

METHOD / ANALYST SUMMARY

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method	Analyst	Analyst ID
SW846 8260B	Hubbs, Lisa M	LMH
SW846 8270C	Hoffman, Michael G	MGH
SW846 8015B	Byl, Amelia M	AMB
RSK RSK-175	Lam, Jason A	JAL
SW846 8015B	Pavlakovich, Adam M	AMP
EPA 200.7 Rev 4.4	Bowen, Heidi E	HEB
EPA 200.8	Lill, Thomas E	TEL
USDA 20B	Harre, John K	JKH
EPA 245.1	Rawlings, Brendon L	BLR
MCAWW 300.0	Kudla, Ewa	EK
SM SM 2320B	Gilbert, Bryan M	BMG
SM SM 2510B	Hostetler, Jeffrey M	JMH
SM SM 2540C	Domnick, Brandon J	BJD
SM SM 4500 H+ B	Ayala, Delaina	DA
SM SM 5310B	Bandy, Darlene F	DFB

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Surrogate Recovery Report**8260B Volatile Organic Compounds (GC/MS)****Client Matrix: Water**

Lab Sample ID	Client Sample ID	DBFM %Rec	DCA %Rec	TOL %Rec	BFB %Rec
280-30333-1	HUNT CISTERN	98	90	102	110
MB 280-126426/6		95	84	98	110
LCS 280-126426/5		95	83	100	103
LCSD 280-126426/7		93	80	101	104
280-30487-B-1 MS		94	80	104	106
280-30487-A-1 MSD		95	81	104	109

Surrogate	Acceptance Limits
DBFM = Dibromofluoromethane (Surr)	77-120
DCA = 1,2-Dichloroethane-d4 (Surr)	70-127
TOL = Toluene-d8 (Surr)	80-125
BFB = 4-Bromofluorobenzene (Surr)	78-120

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Surrogate Recovery Report

8270C Semivolatile Organic Compounds (GC/MS)

Client Matrix: Water

Lab Sample ID	Client Sample ID	2FP %Rec	PHL %Rec	NBZ %Rec	FBP %Rec	TBP %Rec	TPH %Rec
280-30333-1	HUNT CISTERN	88	93	92	89	117	105
MB 280-125241/1-A		88	92	93	75	109	112
LCS 280-125241/2-A		89	95	91	82	123X	107
LCSD 280-125241/3-A		88	92	87	75	120	106

Surrogate	Acceptance Limits
2FP = 2-Fluorophenol	51-120
PHL = Phenol-d5	51-120
NBZ = Nitrobenzene-d5	48-120
FBP = 2-Fluorobiphenyl	38-120
TBP = 2,4,6-Tribromophenol	57-120
TPH = Terphenyl-d14	50-120

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Surrogate Recovery Report

8015B Gasoline Range Organics - (GC)

Client Matrix: Water

Lab Sample ID	Client Sample ID	TFT1 %Rec
280-30333-1	HUNT CISTERN	90
MB 280-125437/5		91
LCS 280-125437/3		94
LCSD 280-125437/4		92
280-30303-U-3 MS		147X
280-30303-U-3 MSD		147X

Surrogate	Acceptance Limits
TFT = a,a,a-Trifluorotoluene	82-110

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Surrogate Recovery Report

8015B Diesel Range Organics (DRO) (GC)

Client Matrix: Water

Lab Sample ID	Client Sample ID	OTPH1 %Rec	OTC1 %Rec
280-30333-1	HUNT CISTERN	71	90
MB 280-125259/1-A		71	90
LCS 280-125259/2-A		79	93
LCSD 280-125259/3-A		80	91
280-30303-D-3-A MS		72	91
280-30303-F-3-A MSD		73	95

Surrogate	Acceptance Limits
OTPH = o-Terphenyl	50-115
OTC = n-Octacosane	26-152

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-126426

Method: 8260B

Preparation: 5030B

Lab Sample ID: MB 280-126426/6
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 06/29/2012 2147
 Prep Date: 06/29/2012 2147
 Leach Date: N/A

Analysis Batch: 280-126426
 Prep Batch: N/A
 Leach Batch: N/A
 Units: ug/L

Instrument ID: MSV_P
 Lab File ID: P9179.D
 Initial Weight/Volume: 20 mL
 Final Weight/Volume: 20 mL

Analyte	Result	Qual	MDL	RL
1,1,1,2-Tetrachloroethane	ND		0.21	1.0
1,1,1-Trichloroethane	ND		0.16	1.0
1,1,2,2-Tetrachloroethane	ND		0.21	1.0
1,1,2-Trichloroethane	ND		0.27	1.0
1,1-Dichloroethane	ND		0.22	1.0
1,1-Dichloroethene	ND		0.23	1.0
1,1-Dichloropropene	ND		0.19	1.0
1,2,3-Trichlorobenzene	ND		0.21	1.0
1,2,3-Trichloropropane	ND		0.33	2.5
1,2,4-Trichlorobenzene	ND		0.21	1.0
1,2,4-Trimethylbenzene	ND		0.15	1.0
1,2-Dibromo-3-Chloropropane	ND		0.47	5.0
1,2-Dibromoethane	ND		0.18	1.0
1,2-Dichlorobenzene	ND		0.15	1.0
1,2-Dichloroethane	ND		0.13	1.0
1,2-Dichloroethene, Total	ND		0.24	1.0
1,2-Dichloropropane	ND		0.18	1.0
1,3,5-Trimethylbenzene	ND		0.16	1.0
1,3-Dichlorobenzene	ND		0.13	1.0
1,3-Dichloropropane	ND		0.22	1.0
1,4-Dichlorobenzene	ND		0.16	1.0
2,2-Dichloropropane	ND		0.18	1.0
2-Butanone (MEK)	ND		2.0	6.0
2-Chlorotoluene	ND		0.17	1.0
2-Hexanone	ND		1.7	5.0
4-Chlorotoluene	ND		0.21	1.0
4-Isopropyltoluene	ND		0.20	1.0
4-Methyl-2-pentanone (MIBK)	ND		0.98	5.0
Acetone	ND		1.9	10
Benzene	ND		0.16	1.0
Bromobenzene	ND		0.17	1.0
Bromoform	ND		0.19	1.0
Bromomethane	ND		0.21	2.0
Carbon tetrachloride	ND		0.19	1.0
Chlorobenzene	ND		0.17	1.0
Chlorobromomethane	ND		0.10	1.0
Chlorodibromomethane	ND		0.17	1.0
Chloroethane	ND		0.41	2.0
Chloroform	ND		0.16	1.0
Chloromethane	ND		0.30	2.0
cis-1,2-Dichloroethene	ND		0.15	1.0
cis-1,3-Dichloropropene	ND		0.16	1.0
Dibromomethane	ND		0.17	1.0
Dichlorobromomethane	ND		0.17	1.0
Dichlorodifluoromethane	ND		0.31	2.0

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Method Blank - Batch: 280-126426

Method: 8260B

Preparation: 5030B

Lab Sample ID: MB 280-126426/6
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 06/29/2012 2147
 Prep Date: 06/29/2012 2147
 Leach Date: N/A

Analysis Batch: 280-126426
 Prep Batch: N/A
 Leach Batch: N/A
 Units: ug/L

Instrument ID: MSV_P
 Lab File ID: P9179.D
 Initial Weight/Volume: 20 mL
 Final Weight/Volume: 20 mL

Analyte	Result	Qual	MDL	RL
Ethylbenzene	ND		0.16	1.0
Hexachlorobutadiene	ND		0.36	1.0
Isopropylbenzene	ND		0.19	1.0
Methyl tert-butyl ether	ND		0.25	5.0
Methylene Chloride	0.595	J	0.32	2.0
m-Xylene & p-Xylene	ND		0.34	2.0
Naphthalene	ND		0.22	1.0
n-Butylbenzene	ND		0.32	1.0
N-Propylbenzene	ND		0.16	1.0
o-Xylene	ND		0.19	1.0
sec-Butylbenzene	ND		0.17	1.0
Styrene	ND		0.17	1.0
tert-Butylbenzene	ND		0.16	1.0
Tetrachloroethene	ND		0.20	1.0
Toluene	ND		0.17	1.0
trans-1,2-Dichloroethene	ND		0.15	1.0
trans-1,3-Dichloropropene	ND		0.19	3.0
Trichloroethene	ND		0.16	1.0
Trichlorofluoromethane	ND		0.29	2.0
Vinyl chloride	ND		0.10	1.0
Xylenes, Total	ND		0.19	2.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	84	70 - 127
4-Bromofluorobenzene (Surr)	110	78 - 120
Dibromofluoromethane (Surr)	95	77 - 120
Toluene-d8 (Surr)	98	80 - 125

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-126426

Method: 8260B

Preparation: 5030B

LCS Lab Sample ID: LCS 280-126426/5	Analysis Batch: 280-126426	Instrument ID: MSV_P
Client Matrix: Water	Prep Batch: N/A	Lab File ID: P9178.D
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 20 mL
Analysis Date: 06/29/2012 2127	Units: ug/L	Final Weight/Volume: 20 mL
Prep Date: 06/29/2012 2127		
Leach Date: N/A		

LCSD Lab Sample ID: LCSD 280-126426/7	Analysis Batch: 280-126426	Instrument ID: MSV_P
Client Matrix: Water	Prep Batch: N/A	Lab File ID: P9180.D
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 20 mL
Analysis Date: 06/29/2012 2317	Units: ug/L	Final Weight/Volume: 20 mL
Prep Date: 06/29/2012 2317		
Leach Date: N/A		

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
1,1,1-Trichloroethane	89	88	70 - 135	1	20		
1,1-Dichloroethane	90	89	75 - 135	1	21		
1,1-Dichloroethene	93	92	71 - 136	1	20		
1,2-Dichloropropane	86	83	71 - 120	4	20		
1,3-Dichlorobenzene	88	88	74 - 135	0	20		
Benzene	92	90	74 - 135	2	20		
Carbon tetrachloride	98	99	67 - 135	1	21		
Chlorobenzene	93	93	76 - 135	0	20		
Chloroform	89	87	76 - 120	3	20		
Dichlorobromomethane	84	81	73 - 135	4	20		
Ethylbenzene	93	93	72 - 120	0	26		
Methylene Chloride	100	101	54 - 141	1	20		
Tetrachloroethene	93	95	70 - 135	2	20		
Toluene	98	96	73 - 120	2	20		
trans-1,2-Dichloroethene	92	91	75 - 135	1	24		
Trichloroethene	91	88	73 - 135	3	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	83	80	70 - 127
4-Bromofluorobenzene (Surr)	103	104	78 - 120
Dibromofluoromethane (Surr)	95	93	77 - 120
Toluene-d8 (Surr)	100	101	80 - 125

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

**Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-126426**

**Method: 8260B
Preparation: 5030B**

LCS Lab Sample ID: LCS 280-126426/5 Units: ug/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/29/2012 2127
Prep Date: 06/29/2012 2127
Leach Date: N/A

LCSD Lab Sample ID: LCSD 280-126426/7
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/29/2012 2317
Prep Date: 06/29/2012 2317
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
1,1,1-Trichloroethane	5.00	5.00	4.45	4.39
1,1-Dichloroethane	5.00	5.00	4.48	4.44
1,1-Dichloroethene	5.00	5.00	4.66	4.61
1,2-Dichloropropane	5.00	5.00	4.31	4.15
1,3-Dichlorobenzene	5.00	5.00	4.41	4.40
Benzene	5.00	5.00	4.62	4.52
Carbon tetrachloride	5.00	5.00	4.92	4.96
Chlorobenzene	5.00	5.00	4.67	4.66
Chloroform	5.00	5.00	4.46	4.35
Dichlorobromomethane	5.00	5.00	4.18	4.03
Ethylbenzene	5.00	5.00	4.63	4.64
Methylene Chloride	5.00	5.00	4.99	5.04
Tetrachloroethene	5.00	5.00	4.65	4.75
Toluene	5.00	5.00	4.90	4.79
trans-1,2-Dichloroethene	5.00	5.00	4.61	4.54
Trichloroethene	5.00	5.00	4.53	4.40

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-126426**

**Method: 8260B
Preparation: 5030B**

MS Lab Sample ID:	280-30487-B-1 MS	Analysis Batch:	280-126426	Instrument ID:	MSV_P
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	P9184.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	06/30/2012 0039			Final Weight/Volume:	20 mL
Prep Date:	06/30/2012 0039				
Leach Date:	N/A				

MSD Lab Sample ID:	280-30487-A-1 MSD	Analysis Batch:	280-126426	Instrument ID:	MSV_P
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	P9185.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	06/30/2012 0058			Final Weight/Volume:	20 mL
Prep Date:	06/30/2012 0058				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
1,1,1-Trichloroethane	89	90	70 - 135	1	20		
1,1-Dichloroethane	90	89	75 - 135	1	21		
1,1-Dichloroethene	90	91	71 - 136	0	20		
1,2-Dichloropropane	84	82	71 - 120	2	20		
1,3-Dichlorobenzene	87	87	74 - 135	1	20		
Benzene	93	93	74 - 135	0	20		
Carbon tetrachloride	99	99	67 - 135	0	21		
Chlorobenzene	92	93	76 - 135	1	20		
Chloroform	87	88	76 - 120	1	20		
Dichlorobromomethane	80	81	73 - 135	1	20		
Ethylbenzene	91	90	72 - 120	1	26		
Methylene Chloride	86	85	54 - 141	0	20		
Tetrachloroethene	93	94	70 - 135	1	20		
Toluene	96	82	73 - 120	11	20		
trans-1,2-Dichloroethene	89	92	75 - 135	3	24		
Trichloroethene	88	89	73 - 135	1	20		
Surrogate	MS % Rec		MSD % Rec	Acceptance Limits			
1,2-Dichloroethane-d4 (Surr)	80		81	70 - 127			
4-Bromofluorobenzene (Surr)	106		109	78 - 120			
Dibromofluoromethane (Surr)	94		95	77 - 120			
Toluene-d8 (Surr)	104		104	80 - 125			

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-126426

Method: 8260B

Preparation: 5030B

MS Lab Sample ID: 280-30487-B-1 MS Units: ug/L
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 06/30/2012 0039
 Prep Date: 06/30/2012 0039
 Leach Date: N/A

MSD Lab Sample ID: 280-30487-A-1 MSD
 Client Matrix: Water
 Dilution: 1.0
 Analysis Date: 06/30/2012 0058
 Prep Date: 06/30/2012 0058
 Leach Date: N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
1,1,1-Trichloroethane	ND	5.00	5.00	4.47	4.52
1,1-Dichloroethane	ND	5.00	5.00	4.49	4.44
1,1-Dichloroethene	ND	5.00	5.00	4.52	4.53
1,2-Dichloropropane	ND	5.00	5.00	4.20	4.12
1,3-Dichlorobenzene	ND	5.00	5.00	4.34	4.37
Benzene	ND	5.00	5.00	4.66	4.65
Carbon tetrachloride	ND	5.00	5.00	4.97	4.97
Chlorobenzene	ND	5.00	5.00	4.61	4.65
Chloroform	ND	5.00	5.00	4.36	4.39
Dichlorobromomethane	ND	5.00	5.00	4.01	4.04
Ethylbenzene	0.32 J	5.00	5.00	4.88	4.84
Methylene Chloride	0.56 J	5.00	5.00	4.84	4.81
Tetrachloroethene	ND	5.00	5.00	4.67	4.70
Toluene	1.6	5.00	5.00	6.42	5.74
trans-1,2-Dichloroethene	ND	5.00	5.00	4.45	4.60
Trichloroethene	ND	5.00	5.00	4.40	4.43

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125241

Method: 8270C

Preparation: 3520C

Lab Sample ID: MB 280-125241/1-A
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/29/2012 1110
Prep Date: 06/22/2012 1420
Leach Date: N/A

Analysis Batch: 280-126328
Prep Batch: 280-125241
Leach Batch: N/A
Units: ug/L

Instrument ID: MSS_Y
Lab File ID: Y8507.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1000 uL
Injection Volume: 0.5 uL

Analyte	Result	Qual	MDL	RL
2,2'-oxybis[1-chloropropane]	ND		0.28	10
2,4,5-Trichlorophenol	ND		0.45	10
2,4,6-Trichlorophenol	ND		0.29	10
2,4-Dichlorophenol	ND		0.64	10
2,4-Dimethylphenol	ND		0.58	10
2,4-Dinitrophenol	ND		10	30
2,4-Dinitrotoluene	ND		1.7	10
2,6-Dinitrotoluene	ND		1.9	10
2-Chloronaphthalene	ND		0.26	4.0
2-Chlorophenol	ND		2.0	10
2-Methylnaphthalene	ND		0.29	4.0
2-Methylphenol	ND		0.98	10
2-Nitroaniline	ND		1.7	10
2-Nitrophenol	ND		0.39	10
3 & 4 Methylphenol	ND		0.25	10
3,3'-Dichlorobenzidine	ND		2.0	50
3-Nitroaniline	ND		2.0	10
4,6-Dinitro-2-methylphenol	ND		4.0	50
4-Bromophenyl phenyl ether	ND		0.43	10
4-Chloro-3-methylphenol	ND		2.4	10
4-Chloroaniline	ND		2.1	10
4-Chlorophenyl phenyl ether	ND		1.7	10
4-Nitroaniline	ND		2.0	10
4-Nitrophenol	ND		1.2	10
Acenaphthene	ND		0.28	4.0
Acenaphthylene	ND		0.49	4.0
Acetophenone	ND		0.24	10
Anthracene	ND		0.42	4.0
Atrazine	ND		0.73	10
Benzidine	ND		50	100
Benzo[a]anthracene	ND		0.35	4.0
Benzo[a]pyrene	ND		0.31	4.0
Benzo[b]fluoranthene	ND		0.53	4.0
Benzo[g,h,i]perylene	ND		0.50	4.0
Benzo[k]fluoranthene	ND		0.46	4.0
Bis(2-chloroethoxy)methane	ND		0.97	10
Bis(2-chloroethyl)ether	ND		0.41	10
Bis(2-ethylhexyl) phthalate	ND		0.56	10
Butyl benzyl phthalate	ND		1.0	4.0
Caprolactam	ND		5.0	10
Carbazole	ND		0.43	4.0
Chrysene	ND		0.54	4.0
Cresols, Total	ND		0.25	10
Dibenz(a,h)anthracene	ND		0.51	4.0
Dibenzofuran	ND		0.29	4.0

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Method Blank - Batch: 280-125241

Method: 8270C

Preparation: 3520C

Lab Sample ID: MB 280-125241/1-A
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/29/2012 1110
Prep Date: 06/22/2012 1420
Leach Date: N/A

Analysis Batch: 280-126328
Prep Batch: 280-125241
Leach Batch: N/A
Units: ug/L

Instrument ID: MSS_Y
Lab File ID: Y8507.D
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1000 uL
Injection Volume: 0.5 uL

Analyte	Result	Qual	MDL	RL
Diethyl phthalate	ND		0.38	4.0
Dimethyl phthalate	ND		0.21	4.0
Di-n-butyl phthalate	ND		1.2	4.0
Di-n-octyl phthalate	ND		0.35	4.0
Fluoranthene	ND		0.20	4.0
Fluorene	ND		0.31	4.0
Hexachlorobenzene	ND		0.66	10
Hexachlorobutadiene	ND		3.3	10
Hexachlorocyclopentadiene	ND		10	50
Hexachloroethane	ND		2.1	10
Indeno[1,2,3-cd]pyrene	ND		0.65	4.0
Naphthalene	ND		0.29	4.0
Nitrobenzene	ND		0.81	10
N-Nitrosodi-n-propylamine	ND		0.35	10
n-Nitrosodiphenylamine(as diphenylamine)	ND		0.44	10
Pentachlorophenol	ND		20	50
Phenanthrene	ND		0.26	4.0
Phenol	ND		2.0	10
Pyrene	ND		0.37	10

Surrogate	% Rec	Acceptance Limits
2,4,6-Tribromophenol	109	57 - 120
2-Fluorobiphenyl	75	38 - 120
2-Fluorophenol	88	51 - 120
Nitrobenzene-d5	93	48 - 120
Phenol-d5	92	51 - 120
Terphenyl-d14	112	50 - 120

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-125241

Method: 8270C

Preparation: 3520C

LCS Lab Sample ID:	LCS 280-125241/2-A	Analysis Batch:	280-126328	Instrument ID:	MSS_Y
Client Matrix:	Water	Prep Batch:	280-125241	Lab File ID:	Y8508.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	06/29/2012 1131	Units:	ug/L	Final Weight/Volume:	1000 uL
Prep Date:	06/22/2012 1420			Injection Volume:	0.5 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-125241/3-A	Analysis Batch:	280-126328	Instrument ID:	MSS_Y
Client Matrix:	Water	Prep Batch:	280-125241	Lab File ID:	Y8509.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	06/29/2012 1151	Units:	ug/L	Final Weight/Volume:	1000 uL
Prep Date:	06/22/2012 1420			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
1,2,4-Trichlorobenzene	77	71	28 - 120	8	42		
1,4-Dichlorobenzene	78	73	25 - 120	7	52		
2,4,5-Trichlorophenol	105	103	64 - 120	1	30		
2,4,6-Trichlorophenol	100	100	62 - 120	0	30		
2,4-Dinitrotoluene	111	112	76 - 120	1	32		
2-Chlorophenol	92	91	58 - 120	1	30		
2-Methylnaphthalene	82	75	42 - 120	9	32		
2-Methylphenol	91	90	62 - 120	1	30		
4-Chloro-3-methylphenol	102	101	69 - 120	0	30		
4-Nitrophenol	116	119	59 - 129	2	35		
Acenaphthene	84	80	61 - 120	5	30		
Anthracene	97	97	71 - 120	0	30		
Carbazole	102	102	72 - 120	0	30		
N-Nitrosodi-n-propylamine	92	93	58 - 120	1	30		
Pentachlorophenol	93	95	57 - 120	1	33		
Phenol	93	92	61 - 120	1	42		
Pyrene	98	98	71 - 120	1	30		

Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits
2,4,6-Tribromophenol	123	X	120		57 - 120
2-Fluorobiphenyl	82		75		38 - 120
2-Fluorophenol	89		88		51 - 120
Nitrobenzene-d5	91		87		48 - 120
Phenol-d5	95		92		51 - 120
Terphenyl-d14	107		106		50 - 120

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

**Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-125241**

**Method: 8270C
Preparation: 3520C**

LCS Lab Sample ID: LCS 280-125241/2-A Units: ug/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/29/2012 1131
Prep Date: 06/22/2012 1420
Leach Date: N/A

LCSD Lab Sample ID: LCSD 280-125241/3-A
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/29/2012 1151
Prep Date: 06/22/2012 1420
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
1,2,4-Trichlorobenzene	80.0	80.0	61.5	56.9
1,4-Dichlorobenzene	80.0	80.0	62.4	58.2
2,4,5-Trichlorophenol	80.0	80.0	84.0	82.8
2,4,6-Trichlorophenol	80.0	80.0	80.0	79.7
2,4-Dinitrotoluene	80.0	80.0	88.7	89.8
2-Chlorophenol	80.0	80.0	73.6	73.1
2-Methylnaphthalene	80.0	80.0	65.4	59.8
2-Methylphenol	80.0	80.0	72.5	71.7
4-Chloro-3-methylphenol	80.0	80.0	81.5	81.1
4-Nitrophenol	80.0	80.0	93.1	95.1
Acenaphthene	80.0	80.0	66.8	63.6
Anthracene	80.0	80.0	77.8	77.5
Carbazole	80.0	80.0	81.9	81.6
N-Nitrosodi-n-propylamine	80.0	80.0	73.5	74.4
Pentachlorophenol	80.0	80.0	74.6	75.7
Phenol	80.0	80.0	74.5	73.9
Pyrene	80.0	80.0	78.6	78.1

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125437

Method: 8015B
Preparation: 5030B

Lab Sample ID: MB 280-125437/5	Analysis Batch: 280-125437	Instrument ID: GCV_B
Client Matrix: Water	Prep Batch: N/A	Lab File ID: 110F0501.D
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 5 mL
Analysis Date: 06/22/2012 1354	Units: ug/L	Final Weight/Volume: 5 mL
Prep Date: 06/22/2012 1354		Injection Volume: 5 mL
Leach Date: N/A		Column ID: PRIMARY

Analyte	Result	Qual	MDL	RL
Gasoline Range Organics (GRO)-C6-C10	ND		10	25

Surrogate	% Rec	Acceptance Limits
a,a,a-Trifluorotoluene	91	82 - 110

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-125437

Method: 8015B
Preparation: 5030B

LCS Lab Sample ID: LCS 280-125437/3	Analysis Batch: 280-125437	Instrument ID: GCV_B
Client Matrix: Water	Prep Batch: N/A	Lab File ID: 108F0301.D
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 5 mL
Analysis Date: 06/22/2012 1247	Units: ug/L	Final Weight/Volume: 5 mL
Prep Date: 06/22/2012 1247		Injection Volume: 5 mL
Leach Date: N/A		Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 280-125437/4	Analysis Batch: 280-125437	Instrument ID: GCV_B
Client Matrix: Water	Prep Batch: N/A	Lab File ID: 109F0401.D
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 5 mL
Analysis Date: 06/22/2012 1320	Units: ug/L	Final Weight/Volume: 5 mL
Prep Date: 06/22/2012 1320		Injection Volume: 5 mL
Leach Date: N/A		Column ID: PRIMARY

Analyte	LCS	<u>% Rec.</u> LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline Range Organics (GRO)-C6-C10	105	105	79 - 149	0	27		
Surrogate		LCS % Rec	LCSD % Rec		Acceptance Limits		
a,a,a-Trifluorotoluene		94	92		82 - 110		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Control/ Laboratory Duplicate Data Report - Batch: 280-125437

Method: 8015B
Preparation: 5030B

LCS Lab Sample ID: LCS 280-125437/3 Units: ug/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1247
Prep Date: 06/22/2012 1247
Leach Date: N/A

LCSD Lab Sample ID: LCSD 280-125437/4
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1320
Prep Date: 06/22/2012 1320
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Gasoline Range Organics (GRO)-C6-C10	101	101	106	106

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-125437

Method: 8015B
Preparation: 5030B

MS Lab Sample ID: 280-30303-U-3 MS
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1654
Prep Date: 06/22/2012 1654
Leach Date: N/A

Analysis Batch: 280-125437
Prep Batch: N/A
Leach Batch: N/A

Instrument ID: GCV_B
Lab File ID: 113F0801.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL
Injection Volume: 5 mL
Column ID: PRIMARY

MSD Lab Sample ID: 280-30303-U-3 MSD
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1728
Prep Date: 06/22/2012 1728
Leach Date: N/A

Analysis Batch: 280-125437
Prep Batch: N/A
Leach Batch: N/A

Instrument ID: GCV_B
Lab File ID: 114F0901.D
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL
Injection Volume: 5 mL
Column ID: PRIMARY

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Gasoline Range Organics (GRO)-C6-C10	79	81	79 - 149	1	27		
Surrogate	MS % Rec		MSD % Rec	Acceptance Limits			
a,a,a-Trifluorotoluene	147	X	147	X		82 - 110	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-125437**

**Method: 8015B
Preparation: 5030B**

MS Lab Sample ID: 280-30303-U-3 MS Units: ug/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1654
Prep Date: 06/22/2012 1654
Leach Date: N/A

MSD Lab Sample ID: 280-30303-U-3 MSD
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1728
Prep Date: 06/22/2012 1728
Leach Date: N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Gasoline Range Organics (GRO)-C6-C10	110	101	101	193	195

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 600-83033

Method: RSK-175

Preparation: N/A

Lab Sample ID:	MB 600-83033/2	Analysis Batch:	600-83033	Instrument ID:	FID14
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	rsk070212_002.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 mL
Analysis Date:	07/02/2012 1438	Units:	ug/L	Final Weight/Volume:	1 mL
Prep Date:	N/A			Injection Volume:	
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Ethane	ND		0.30	2.0
Methane	ND		0.36	1.0
Propane	ND		0.75	2.0

Lab Control Sample - Batch: 600-83033

Method: RSK-175

Preparation: N/A

Lab Sample ID:	LCS 600-83033/3	Analysis Batch:	600-83033	Instrument ID:	FID14
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	rsk070212_003.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 mL
Analysis Date:	07/02/2012 1452	Units:	ug/L	Final Weight/Volume:	1 mL
Prep Date:	N/A			Injection Volume:	
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Ethane	12.9	10.8	84	70 - 130	
Methane	6.86	6.66	97	70 - 130	
Propane	18.9	16.7	88	70 - 130	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 600-83033

Method: RSK-175
Preparation: N/A

MS Lab Sample ID:	280-30378-P-1 MS	Analysis Batch:	600-83033	Instrument ID:	FID14
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	rsk070212_013.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 mL
Analysis Date:	07/02/2012 1729			Final Weight/Volume:	1 mL
Prep Date:	N/A			Injection Volume:	
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-30378-P-1 MSD	Analysis Batch:	600-83033	Instrument ID:	FID14
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	rsk070212_014.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 mL
Analysis Date:	07/02/2012 1746			Final Weight/Volume:	1 mL
Prep Date:	N/A			Injection Volume:	
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Ethane	83	82	70 - 130	1	30		
Methane	81	81	70 - 130	0	30		
Propane	90	88	70 - 130	2	30		

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 600-83033

Method: RSK-175
Preparation: N/A

MS Lab Sample ID:	280-30378-P-1 MS	Units:	ug/L	MSD Lab Sample ID:	280-30378-P-1 MSD
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	07/02/2012 1729			Analysis Date:	07/02/2012 1746
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
	Result/Qual					
Ethane	0.40	J	12.9	12.9	11.1	10.9
Methane	2.0		6.86	6.86	7.57	7.55
Propane	ND		18.9	18.9	16.9	16.6

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125259

Method: 8015B
Preparation: 3510C

Lab Sample ID:	MB 280-125259/1-A	Analysis Batch:	280-125910	Instrument ID:	GCS_U2
Client Matrix:	Water	Prep Batch:	280-125259	Lab File ID:	006F0601.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	06/27/2012 1525	Units:	mg/L	Final Weight/Volume:	1000 uL
Prep Date:	06/22/2012 1658			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
C10-C36	ND		0.056	0.50
Surrogate	% Rec	Acceptance Limits		
o-Terphenyl	71		50 - 115	
n-Octacosane	90		26 - 152	

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-125259

Method: 8015B
Preparation: 3510C

LCS Lab Sample ID:	LCS 280-125259/2-A	Analysis Batch:	280-125910	Instrument ID:	GCS_U2
Client Matrix:	Water	Prep Batch:	280-125259	Lab File ID:	007F0701.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	06/27/2012 1549	Units:	mg/L	Final Weight/Volume:	1000 uL
Prep Date:	06/22/2012 1658			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

LCSD Lab Sample ID:	LCSD 280-125259/3-A	Analysis Batch:	280-125910	Instrument ID:	GCS_U2
Client Matrix:	Water	Prep Batch:	280-125259	Lab File ID:	008F0801.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	06/27/2012 1613	Units:	mg/L	Final Weight/Volume:	1000 uL
Prep Date:	06/22/2012 1658			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
C10-C36	91	84	57 - 115	8	31		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
o-Terphenyl	79		80		50 - 115		
n-Octacosane	93		91		26 - 152		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Control/ Laboratory Duplicate Data Report - Batch: 280-125259

Method: 8015B
Preparation: 3510C

LCS Lab Sample ID: LCS 280-125259/2-A Units: mg/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/27/2012 1549
Prep Date: 06/22/2012 1658
Leach Date: N/A

LCSD Lab Sample ID: LCSD 280-125259/3-A
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/27/2012 1613
Prep Date: 06/22/2012 1658
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	2.00	2.00	1.82	1.69

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-125259

Method: 8015B
Preparation: 3510C

MS Lab Sample ID: 280-30303-D-3-A MS
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/27/2012 1727
Prep Date: 06/22/2012 1658
Leach Date: N/A

Analysis Batch: 280-125910
Prep Batch: 280-125259
Leach Batch: N/A

Instrument ID: GCS_U2
Lab File ID: 011F1101.D
Initial Weight/Volume: 1059.6 mL
Final Weight/Volume: 1000 uL
Injection Volume: 1 uL
Column ID: PRIMARY

MSD Lab Sample ID: 280-30303-F-3-A MSD
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/27/2012 1751
Prep Date: 06/22/2012 1658
Leach Date: N/A

Analysis Batch: 280-125910
Prep Batch: 280-125259
Leach Batch: N/A

Instrument ID: GCS_U2
Lab File ID: 012F1201.D
Initial Weight/Volume: 1047 mL
Final Weight/Volume: 1000 uL
Injection Volume: 1 uL
Column ID: PRIMARY

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
C10-C36	74	76	50 - 115	4	31		
Surrogate		MS % Rec	MSD % Rec			Acceptance Limits	
o-Terphenyl		72	73			50 - 115	
n-Octacosane		91	95			26 - 152	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-125259

Method: 8015B

Preparation: 3510C

MS Lab Sample ID: 280-30303-D-3-A MS Units: mg/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/27/2012 1727
Prep Date: 06/22/2012 1658
Leach Date: N/A

MSD Lab Sample ID: 280-30303-F-3-A MSD
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/27/2012 1751
Prep Date: 06/22/2012 1658
Leach Date: N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	0.085	J	1.89	1.91	1.48	1.54

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125463

Lab Sample ID: MB 280-125231/1-C
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2340
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125764
Prep Batch: 280-125463
Leach Batch: N/A
Units: ug/L

Method: 200.7 Rev 4.4

Preparation: 200.7 Dissolved

Instrument ID: MT_026
Lab File ID: 26A062612.asc
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Aluminum	ND		18	100
Beryllium	ND		0.47	1.0
Boron	ND		4.4	100
Calcium	ND		35	200
Chromium	ND		0.66	10
Iron	ND		22	100
Lithium	ND		2.6	10
Magnesium	ND		11	200
Nickel	ND		1.3	40
Potassium	ND		240	3000
Silicon	ND		35	500
Sodium	ND		92	5000
Strontium	ND		0.30	10
Vanadium	ND		1.1	10
Zinc	ND		4.5	20

Lab Control Sample - Batch: 280-125463

Lab Sample ID: LCS 280-125231/2-C
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2343
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125764
Prep Batch: 280-125463
Leach Batch: N/A
Units: ug/L

Method: 200.7 Rev 4.4

Preparation: 200.7 Dissolved

Instrument ID: MT_026
Lab File ID: 26A062612.asc
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	2000	1970	99	87 - 111	
Beryllium	50.0	49.7	99	89 - 113	
Boron	1000	1060	106	86 - 110	
Calcium	50000	49300	99	90 - 111	
Chromium	200	200	100	90 - 113	
Iron	1000	987	99	89 - 115	
Lithium	1000	1020	102	90 - 112	
Magnesium	50000	50500	101	90 - 113	
Nickel	500	497	99	89 - 111	
Potassium	50000	52100	104	89 - 114	
Silicon	10000	10000	100	90 - 110	
Sodium	50000	51800	104	90 - 115	
Strontium	1000	1010	101	90 - 111	
Vanadium	500	511	102	90 - 111	
Zinc	500	505	101	85 - 111	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-125463

Method: 200.7 Rev 4.4
Preparation: 200.7
Dissolved

MS Lab Sample ID: 280-30333-1
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2351
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125764
Prep Batch: 280-125463
Leach Batch: N/A

Instrument ID: MT_026
Lab File ID: 26A062612.asc
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

MSD Lab Sample ID: 280-30333-1
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2354
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125764
Prep Batch: 280-125463
Leach Batch: N/A

Instrument ID: MT_026
Lab File ID: 26A062612.asc
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Aluminum	93	92	87 - 111	2	20		
Beryllium	97	95	89 - 113	2	20		
Boron	98	96	86 - 110	1	20		
Calcium	96	92	90 - 111	1	20		
Chromium	98	96	90 - 113	2	20		
Iron	99	97	89 - 115	2	20		
Lithium	106	104	90 - 112	1	20		
Magnesium	96	93	90 - 113	1	20		
Nickel	96	95	89 - 111	1	20		
Potassium	114	113	89 - 114	1	20		
Silicon	100	97	90 - 110	1	20		
Sodium	85	65	90 - 115	1	20	4	4
Strontium	97	93	90 - 111	1	20		
Vanadium	104	102	90 - 111	2	20		
Zinc	102	100	85 - 111	2	20		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-125463

Method: 200.7 Rev 4.4

**Preparation: 200.7
Dissolved**

MS Lab Sample ID: 280-30333-1 Units: ug/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2351
Prep Date: 06/26/2012 1400
Leach Date: N/A

MSD Lab Sample ID: 280-30333-1
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2354
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Aluminum	ND	2000	2000	1860	1830
Beryllium	ND	50.0	50.0	48.4	47.5
Boron	480	1000	1000	1460	1440
Calcium	110000	50000	50000	154000	152000
Chromium	ND	200	200	196	193
Iron	ND	1000	1000	990	969
Lithium	100	1000	1000	1160	1150
Magnesium	100000	50000	50000	150000	149000
Nickel	3.8 J	500	500	486	479
Potassium	5100	50000	50000	62200	61400
Silicon	6200	10000	10000	16200	15900
Sodium	1200000	50000	50000	1250000 4	1240000 4
Strontium	3500	1000	1000	4440	4400
Vanadium	1.6 J	500	500	521	513
Zinc	8.5 J	500	500	518	510

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Serial Dilution - Batch: 280-125463

Method: 200.7 Rev 4.4

Preparation: 200.7

Dissolved

Lab Sample ID:	280-30333-1	Analysis Batch:	280-125764	Instrument ID:	MT_026
Client Matrix:	Water	Prep Batch:	280-125463	Lab File ID:	26A062612.asc
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	06/26/2012 2349	Units:	ug/L	Final Weight/Volume:	50 mL
Prep Date:	06/26/2012 1400				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	%Diff	Limit	Qual
Aluminum	ND		ND	NC	10	
Beryllium	ND		ND	NC	10	
Boron	480		523	9.0	10	
Calcium	110000		111000	4.8	10	
Chromium	ND		ND	NC	10	
Iron	ND		ND	NC	10	
Lithium	100		111	NC	10	
Magnesium	100000		107000	4.4	10	
Nickel	3.8	J	ND	NC	10	
Potassium	5100		5790	NC	10	J
Silicon	6200		6470	4.8	10	
Sodium	1200000		1260000	4.1	10	
Strontium	3500		3620	4.3	10	
Vanadium	1.6	J	ND	NC	10	
Zinc	8.5	J	25.4	NC	10	J

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125466

Lab Sample ID: MB 280-125420/1-B
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2345
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125775
Prep Batch: 280-125466
Leach Batch: N/A
Units: ug/L

Method: 200.8 Preparation: 200.8 Dissolved

Instrument ID: MT_024
Lab File ID: 061_BLK.D
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Antimony	ND		0.16	2.0
Arsenic	ND		0.50	5.0
Barium	ND		0.38	1.0
Cadmium	ND		0.040	1.0
Cobalt	ND		0.050	1.0
Copper	ND		0.20	2.0
Lead	ND		0.10	1.0
Manganese	ND		0.51	2.0
Molybdenum	0.0689	J	0.040	2.0
Selenium	ND		1.0	5.0
Silver	0.0394	J	0.020	1.0
Thallium	ND		0.066	1.0
Uranium	ND		0.030	1.0

Lab Control Sample - Batch: 280-125466

Lab Sample ID: LCS 280-125420/2-B
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2348
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125775
Prep Batch: 280-125466
Leach Batch: N/A
Units: ug/L

Method: 200.8 Preparation: 200.8 Dissolved

Instrument ID: MT_024
Lab File ID: 062_LCS.D
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	40.0	40.3	101	85 - 115	
Arsenic	40.0	41.1	103	89 - 111	
Barium	40.0	41.2	103	89 - 115	
Cadmium	40.0	40.0	100	89 - 111	
Cobalt	40.0	39.3	98	92 - 115	
Copper	40.0	39.3	98	90 - 115	
Lead	40.0	41.4	104	88 - 115	
Manganese	40.0	39.5	99	87 - 115	
Molybdenum	40.0	41.2	103	89 - 112	
Selenium	40.0	40.7	102	85 - 114	
Silver	40.0	39.4	98	90 - 114	
Thallium	40.0	44.1	110	86 - 115	
Uranium	40.0	44.7	112	85 - 115	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-125466

Method: 200.8
Preparation: 200.8
Dissolved

MS Lab Sample ID: 280-30378-F-1-D MS
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2354
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125775
Prep Batch: 280-125466
Leach Batch: N/A

Instrument ID: MT_024
Lab File ID: 064_MS.D
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

MSD Lab Sample ID: 280-30378-F-1-E MSD
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2357
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analysis Batch: 280-125775
Prep Batch: 280-125466
Leach Batch: N/A

Instrument ID: MT_024
Lab File ID: 065_MSD.D
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Antimony	98	96	85 - 115	2	30		
Arsenic	103	100	79 - 120	2	30		
Barium	99	96	89 - 115	2	30		
Cadmium	91	91	89 - 111	0	30		
Cobalt	91	90	92 - 115	1	30	F	F
Copper	85	83	90 - 115	1	30	F	F
Lead	90	90	88 - 115	0	30		
Manganese	92	91	87 - 115	1	35		
Molybdenum	100	97	89 - 112	2	30		
Selenium	106	106	85 - 114	0	35		
Silver	84	83	20 - 120	1	40		
Thallium	96	96	86 - 115	1	30		
Uranium	106	107	85 - 115	0	30		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-125466**

**Method: 200.8
Preparation: 200.8
Dissolved**

MS Lab Sample ID: 280-30378-F-1-D MS Units: ug/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2354
Prep Date: 06/26/2012 1400
Leach Date: N/A

MSD Lab Sample ID: 280-30378-F-1-E MSD
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 2357
Prep Date: 06/26/2012 1400
Leach Date: N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual		MSD Result/Qual	
Antimony	ND		40.0	40.0	39.2		38.3	
Arsenic	2.0	J	40.0	40.0	43.1		42.2	
Barium	12		40.0	40.0	51.1		50.0	
Cadmium	ND		40.0	40.0	36.4		36.3	
Cobalt	0.052	J	40.0	40.0	36.3	F	36.0	F
Copper	28		40.0	40.0	62.3	F	61.6	F
Lead	0.14	J	40.0	40.0	36.2		36.3	
Manganese	2.3		40.0	40.0	39.0		38.7	
Molybdenum	23		40.0	40.0	62.9		61.7	
Selenium	13		40.0	40.0	54.8		55.0	
Silver	0.023	J	40.0	40.0	33.6		33.3	
Thallium	ND		40.0	40.0	38.3		38.6	
Uranium	5.0		40.0	40.0	47.5		47.7	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125550

Method: 20B Preparation: N/A

Lab Sample ID: MB 280-125550/1
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/26/2012 0710
Prep Date: N/A
Leach Date: N/A

Analysis Batch: 280-125550
Prep Batch: N/A
Leach Batch: N/A
Units: No Unit

Instrument ID: MT_025
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume: 1.0 mL

Analyte	Result	Qual	MDL	RL
Sodium Adsorption Ratio	ND		0.40	0.40

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Method Blank - Batch: 280-125255

Lab Sample ID: MB 280-125231/1-B
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/25/2012 1442
Prep Date: 06/25/2012 1200
Leach Date: N/A

Analysis Batch: 280-125577
Prep Batch: 280-125255
Leach Batch: N/A
Units: ug/L

Method: 245.1 Preparation: 245.1 Dissolved

Instrument ID: MT_033
Lab File ID: 120625aa.txt
Initial Weight/Volume: 30 mL
Final Weight/Volume: 30 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.0320	J	0.027	0.20

Lab Control Sample - Batch: 280-125255

Lab Sample ID: LCS 280-125231/2-B
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/25/2012 1445
Prep Date: 06/25/2012 1200
Leach Date: N/A

Analysis Batch: 280-125577
Prep Batch: 280-125255
Leach Batch: N/A
Units: ug/L

Method: 245.1 Preparation: 245.1 Dissolved

Instrument ID: MT_033
Lab File ID: 120625aa.txt
Initial Weight/Volume: 30 mL
Final Weight/Volume: 30 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	5.00	4.62	92	90 - 110	

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-125255

Method: 245.1 Preparation: 245.1 Dissolved

MS Lab Sample ID: 280-30333-1
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/25/2012 1451
Prep Date: 06/25/2012 1200
Leach Date: N/A

Analysis Batch: 280-125577
Prep Batch: 280-125255
Leach Batch: N/A

Instrument ID: MT_033
Lab File ID: 120625aa.txt
Initial Weight/Volume: 30 mL
Final Weight/Volume: 30 mL

MSD Lab Sample ID: 280-30333-1
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/25/2012 1453
Prep Date: 06/25/2012 1200
Leach Date: N/A

Analysis Batch: 280-125577
Prep Batch: 280-125255
Leach Batch: N/A

Instrument ID: MT_033
Lab File ID: 120625aa.txt
Initial Weight/Volume: 30 mL
Final Weight/Volume: 30 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Mercury	92	93	80 - 120	1	10		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-125255

Method: 245.1

Preparation: 245.1 Dissolved

MS Lab Sample ID: 280-30333-1 Units: ug/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/25/2012 1451
Prep Date: 06/25/2012 1200
Leach Date: N/A

MSD Lab Sample ID: 280-30333-1
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/25/2012 1453
Prep Date: 06/25/2012 1200
Leach Date: N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Mercury	0.031	J	5.00	5.00	4.61	4.67

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125489

Method: 300.0

Preparation: N/A

Lab Sample ID:	MB 280-125489/6	Analysis Batch:	280-125489	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	115.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 1000	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Nitrate as N	ND		0.042	0.50
Nitrite as N	ND		0.049	0.50

Method Reporting Limit Check - Batch: 280-125489

Method: 300.0

Preparation: N/A

Lab Sample ID:	MRL 280-125489/3	Analysis Batch:	280-125489	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	112.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 0908	Units:	mg/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N	0.200	0.212	106	50 - 150	J
Nitrite as N	0.200	0.210	105	50 - 150	J

Lab Control Sample/

Method: 300.0

Lab Control Sample Duplicate Recovery Report - Batch: 280-125489

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125489/4	Analysis Batch:	280-125489	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	113.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 0925	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-125489/5	Analysis Batch:	280-125489	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	114.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 0943	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Nitrate as N	93	93	90 - 110	0	10		
Nitrite as N	97	97	90 - 110	0	10		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Laboratory Control/ Laboratory Duplicate Data Report - Batch: 280-125489

Method: 300.0
Preparation: N/A

LCS Lab Sample ID: LCS 280-125489/4 Units: mg/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 0925
Prep Date: N/A
Leach Date: N/A

LCSD Lab Sample ID: LCSD 280-125489/5
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 0943
Prep Date: N/A
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Nitrate as N	5.00	5.00	4.67	4.66
Nitrite as N	5.00	5.00	4.86	4.87

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-125489

Method: 300.0
Preparation: N/A

MS Lab Sample ID: 280-30331-G-4 MS Analysis Batch: 280-125489
Client Matrix: Water Prep Batch: N/A
Dilution: 1.0 Leach Batch: N/A
Analysis Date: 06/22/2012 1525
Prep Date: N/A
Leach Date: N/A

Instrument ID: WC_IC6
Lab File ID: 129.TXT
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

MSD Lab Sample ID: 280-30331-G-4 MSD Analysis Batch: 280-125489
Client Matrix: Water Prep Batch: N/A
Dilution: 1.0 Leach Batch: N/A
Analysis Date: 06/22/2012 1543
Prep Date: N/A
Leach Date: N/A

Instrument ID: WC_IC6
Lab File ID: 130.TXT
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 5 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Nitrate as N	98	98	80 - 120	0	20		
Nitrite as N	102	103	80 - 120	1	20		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Matrix Spike/ Matrix Spike Duplicate Recovery Report - Batch: 280-125489

Method: 300.0
Preparation: N/A

MS Lab Sample ID: 280-30331-G-4 MS Units: mg/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1525
Prep Date: N/A
Leach Date: N/A

MSD Lab Sample ID: 280-30331-G-4 MSD
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1543
Prep Date: N/A
Leach Date: N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Nitrate as N	1.7	5.00	5.00	6.60	6.56
Nitrite as N	1.6	5.00	5.00	6.70	6.74

Duplicate - Batch: 280-125489

Method: 300.0
Preparation: N/A

Lab Sample ID: 280-30331-G-4 DU
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/22/2012 1508
Prep Date: N/A
Leach Date: N/A

Analysis Batch: 280-125489
Prep Batch: N/A
Leach Batch: N/A
Units: mg/L

Instrument ID: WC_IC6
Lab File ID: 128.TXT
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 1.0 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Nitrate as N	1.7	1.52	10	15	
Nitrite as N	1.6	1.66	5	15	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125495

Method: 300.0

Preparation: N/A

Lab Sample ID:	MB 280-125495/6	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	115.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 1000	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Bromide	ND		0.11	0.20
Chloride	ND		0.25	3.0
Fluoride	ND		0.060	0.50
Sulfate	ND		0.23	5.0

Method Reporting Limit Check - Batch: 280-125495

Method: 300.0

Preparation: N/A

Lab Sample ID:	MRL 280-125495/3	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	112.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 0908	Units:	mg/L	Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	0.200	0.181	91	50 - 150	J
Chloride	1.00	0.834	83	50 - 150	J
Fluoride	0.200	0.187	94	50 - 150	J
Sulfate	1.00	1.21	121	50 - 150	J

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-125495

Method: 300.0

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125495/4	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	113.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 0925	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-125495/5	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	114.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 0943	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Bromide	92	92	90 - 110	0	10		
Chloride	97	97	90 - 110	0	10		
Fluoride	98	98	90 - 110	0	10		
Sulfate	98	98	90 - 110	0	10		

Laboratory Control/

Laboratory Duplicate Data Report - Batch: 280-125495

Method: 300.0

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125495/4	Units:	mg/L	LCSD Lab Sample ID:	LCSD 280-125495/5
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	06/22/2012 0925			Analysis Date:	06/22/2012 0943
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Bromide	5.00	5.00	4.61	4.60
Chloride	25.0	25.0	24.2	24.2
Fluoride	5.00	5.00	4.91	4.91
Sulfate	25.0	25.0	24.5	24.4

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Matrix Spike/

Method: 300.0

Matrix Spike Duplicate Recovery Report - Batch: 280-125495

MS Lab Sample ID:	280-30331-G-4 MS	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	129.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 1525			Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	280-30331-G-4 MSD	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	130.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 1543			Final Weight/Volume:	5 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Bromide	116	117	80 - 120	0	20		
Chloride	105	106	80 - 120	0	20		E
Fluoride	60	60	80 - 120	0	20	F	F
Sulfate	98	98	80 - 120	0	20	E	E

Matrix Spike/

Method: 300.0

Matrix Spike Duplicate Recovery Report - Batch: 280-125495

MS Lab Sample ID:	280-30331-G-4 MS	Units:	mg/L	MSD Lab Sample ID:	280-30331-G-4 MSD
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	06/22/2012 1525			Analysis Date:	06/22/2012 1543
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS		MSD	
				Result/Qual		Result/Qual	
Bromide	ND	5.00	5.00	5.82		5.84	
Chloride	24	25.0	25.0	50.0		50.1	E
Fluoride	2.2	5.00	5.00	5.20	F	5.21	F
Sulfate	49	25.0	25.0	73.3	E	73.2	E

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Duplicate - Batch: 280-125495

Method: 300.0
Preparation: N/A

Lab Sample ID:	280-30336-F-1 DU	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	133.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 1635	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Bromide	ND	ND	NC	15	
Fluoride	1.1	1.05	0.4	15	
Sulfate	5.1	5.08	1	15	

Duplicate - Batch: 280-125495

Method: 300.0
Preparation: N/A

Lab Sample ID:	280-30336-F-1 DU	Analysis Batch:	280-125495	Instrument ID:	WC_IC6
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	147.TXT
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/22/2012 2037	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Chloride	330	345	4	15	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Method Blank - Batch: 280-125394

Method: SM 2320B

Preparation: N/A

Lab Sample ID:	MB 280-125394/6	Analysis Batch:	280-125394	Instrument ID:	WC-AT3
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062312.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/23/2012 0840	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Total Alkalinity	ND		1.1	5.0
Bicarbonate Alkalinity as CaCO3	ND		1.1	5.0
Carbonate Alkalinity as CaCO3	ND		1.1	5.0
Hydroxide Alkalinity	ND		1.1	5.0

Lab Control Sample/

Method: SM 2320B

Lab Control Sample Duplicate Recovery Report - Batch: 280-125394

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125394/4	Analysis Batch:	280-125394	Instrument ID:	WC-AT3
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062312.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/23/2012 0831	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-125394/5	Analysis Batch:	280-125394	Instrument ID:	WC-AT3
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062312.TXT
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/23/2012 0836	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Total Alkalinity	104	103	90 - 110	1	10		

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Control/ Laboratory Duplicate Data Report - Batch: 280-125394

Method: SM 2320B
Preparation: N/A

LCS Lab Sample ID: LCS 280-125394/4 Units: mg/L
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/23/2012 0831
Prep Date: N/A
Leach Date: N/A

LCSD Lab Sample ID: LCSD 280-125394/5
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/23/2012 0836
Prep Date: N/A
Leach Date: N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Total Alkalinity	200	200	208	206

Duplicate - Batch: 280-125394

Method: SM 2320B
Preparation: N/A

Lab Sample ID: 280-30230-A-2 DU
Client Matrix: Water
Dilution: 1.0
Analysis Date: 06/23/2012 1006
Prep Date: N/A
Leach Date: N/A

Analysis Batch: 280-125394
Prep Batch: N/A
Leach Batch: N/A
Units: mg/L

Instrument ID: WC-AT3
Lab File ID: 062312.TXT
Initial Weight/Volume: 1.0 mL
Final Weight/Volume: 1.0 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Total Alkalinity	420	423	0.4	10	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Method Blank - Batch: 280-125960

Method: SM 2510B

Preparation: N/A

Lab Sample ID:	MB 280-125960/5	Analysis Batch:	280-125960	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	06/28/2012 1108	Units:	umhos/cm	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Specific Conductance	ND		2.0	2.0

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-125960

Method: SM 2510B

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125960/3	Analysis Batch:	280-125960	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	06/28/2012 1108	Units:	umhos/cm	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-125960/4	Analysis Batch:	280-125960	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	06/28/2012 1108	Units:	umhos/cm	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Specific Conductance	102	101	90 - 110	1	10		

Laboratory Control/

Laboratory Duplicate Data Report - Batch: 280-125960

Method: SM 2510B

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125960/3	Units:	umhos/cm	LCSD Lab Sample ID:	LCSD 280-125960/4
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	06/28/2012 1108			Analysis Date:	06/28/2012 1108
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Specific Conductance	1420	1420	1440	1430

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Duplicate - Batch: 280-125960

Method: SM 2510B

Preparation: N/A

Lab Sample ID:	280-30209-B-1 DU	Analysis Batch:	280-125960	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	06/28/2012 1108	Units:	umhos/cm	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Specific Conductance	1500	1470	0.8	10	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-125751

Method: SM 2540C

Preparation: N/A

Lab Sample ID:	MB 280-125751/1	Analysis Batch:	280-125751	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	100 mL
Analysis Date:	06/27/2012 0819	Units:	mg/L	Final Weight/Volume:	100 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Total Dissolved Solids	ND		4.7	10

Lab Control Sample/

Method: SM 2540C

Lab Control Sample Duplicate Recovery Report - Batch: 280-125751

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125751/2	Analysis Batch:	280-125751	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	100 mL
Analysis Date:	06/27/2012 0819	Units:	mg/L	Final Weight/Volume:	100 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-125751/3	Analysis Batch:	280-125751	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	100 mL
Analysis Date:	06/27/2012 0819	Units:	mg/L	Final Weight/Volume:	100 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Total Dissolved Solids	94	91	86 - 110	3	20		

Laboratory Control/

Method: SM 2540C

Laboratory Duplicate Data Report - Batch: 280-125751

Preparation: N/A

LCS Lab Sample ID:	LCS 280-125751/2	Units:	mg/L	LCSD Lab Sample ID:	LCSD 280-125751/3
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	06/27/2012 0819			Analysis Date:	06/27/2012 0819
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Total Dissolved Solids	502	502	474	458

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Duplicate - Batch: 280-125751

Method: SM 2540C

Preparation: N/A

Lab Sample ID:	280-30328-A-1 DU	Analysis Batch:	280-125751	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	06/27/2012 0819	Units:	mg/L	Final Weight/Volume:	100 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Total Dissolved Solids	6600	6450	2	10	

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

Lab Control Sample/ Lab Control Sample Duplicate Recovery Report - Batch: 280-125326

Method: SM 4500 H+ B
Preparation: N/A

LCS Lab Sample ID:	LCS 280-125326/5	Analysis Batch:	280-125326	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	06/23/2012 1158	Units:	SU	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-125326/16	Analysis Batch:	280-125326	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	06/23/2012 1219	Units:	SU	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
pH	100	100	99 - 101	1	5		

Laboratory Control/ Laboratory Duplicate Data Report - Batch: 280-125326

Method: SM 4500 H+ B
Preparation: N/A

LCS Lab Sample ID:	LCS 280-125326/5	Units:	SU	LCSD Lab Sample ID:	LCSD 280-125326/16
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	06/23/2012 1158			Analysis Date:	06/23/2012 1219
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
pH	7.00	7.00	6.970	7.010

Duplicate - Batch: 280-125326

Method: SM 4500 H+ B
Preparation: N/A

Lab Sample ID:	280-30378-E-1 DU	Analysis Batch:	280-125326	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	06/23/2012 1200	Units:	SU	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
pH	8.12	8.180	0.7	5	HF

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Method Blank - Batch: 280-126107

Method: SM 5310B

Preparation: N/A

Lab Sample ID:	MB 280-126107/25	Analysis Batch:	280-126107	Instrument ID:	WC_SHI2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062712.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	06/28/2012 0339	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Total Organic Carbon - Average	0.282	J	0.16	1.0

Lab Control Sample/

Method: SM 5310B

Lab Control Sample Duplicate Recovery Report - Batch: 280-126107

Preparation: N/A

LCS Lab Sample ID:	LCS 280-126107/23	Analysis Batch:	280-126107	Instrument ID:	WC_SHI2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062712.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	200 mL
Analysis Date:	06/28/2012 0301	Units:	mg/L	Final Weight/Volume:	200 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-126107/24	Analysis Batch:	280-126107	Instrument ID:	WC_SHI2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062712.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	200 mL
Analysis Date:	06/28/2012 0320	Units:	mg/L	Final Weight/Volume:	200 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Total Organic Carbon - Average	98	97	88 - 112	1	15		

Laboratory Control/

Method: SM 5310B

Laboratory Duplicate Data Report - Batch: 280-126107

Preparation: N/A

LCS Lab Sample ID:	LCS 280-126107/23	Units:	mg/L	LCSD Lab Sample ID:	LCSD 280-126107/24
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	06/28/2012 0301			Analysis Date:	06/28/2012 0320
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Total Organic Carbon - Average	25.0	25.0	24.6	24.3

Quality Control Results

Client: Colorado Oil&Gas Conservation Commission

Job Number: 280-30333-1

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-126107**

**Method: SM 5310B
Preparation: N/A**

MS Lab Sample ID:	280-30328-B-1 MS	Analysis Batch:	280-126107	Instrument ID:	WC_SHI2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062712.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	06/28/2012 0413			Final Weight/Volume:	50 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	280-30328-B-1 MSD	Analysis Batch:	280-126107	Instrument ID:	WC_SHI2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	062712.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	06/28/2012 0509			Final Weight/Volume:	50 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Total Organic Carbon - Average	95	96	88 - 112	1	15		

**Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-126107**

**Method: SM 5310B
Preparation: N/A**

MS Lab Sample ID:	280-30328-B-1 MS	Units:	mg/L	MSD Lab Sample ID:	280-30328-B-1 MSD
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	06/28/2012 0413			Analysis Date:	06/28/2012 0509
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Total Organic Carbon - Average	1.5	25.0	25.0	25.4	25.6

DATA REPORTING QUALIFIERS

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Lab Section	Qualifier	Description
GC/MS VOA	B	Compound was found in the blank and sample.
	F	MS or MSD exceeds the control limits
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
GC/MS Semi VOA	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
	X	Surrogate is outside control limits
GC VOA	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
	X	Surrogate is outside control limits
GC Semi VOA	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Metals	B	Compound was found in the blank and sample.
	F	MS or MSD exceeds the control limits
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

DATA REPORTING QUALIFIERS

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Lab Section	Qualifier	Description
General Chemistry	B	Compound was found in the blank and sample.
	HF	Field parameter with a holding time of 15 minutes
	F	MS or MSD exceeds the control limits
	E	Result exceeded calibration range.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:280-126426					
LCS 280-126426/5	Lab Control Sample	T	Water	8260B	
LCSD 280-126426/7	Lab Control Sample Duplicate	T	Water	8260B	
MB 280-126426/6	Method Blank	T	Water	8260B	
280-30333-1	HUNT CISTERN	T	Water	8260B	
280-30487-B-1 MS	Matrix Spike	T	Water	8260B	
280-30487-A-1 MSD	Matrix Spike Duplicate	T	Water	8260B	

Report Basis

T = Total

GC/MS Semi VOA

Prep Batch: 280-125241					
LCS 280-125241/2-A	Lab Control Sample	T	Water	3520C	
LCSD 280-125241/3-A	Lab Control Sample Duplicate	T	Water	3520C	
MB 280-125241/1-A	Method Blank	T	Water	3520C	
280-30333-1	HUNT CISTERN	T	Water	3520C	
Analysis Batch:280-126328					
LCS 280-125241/2-A	Lab Control Sample	T	Water	8270C	280-125241
LCSD 280-125241/3-A	Lab Control Sample Duplicate	T	Water	8270C	280-125241
MB 280-125241/1-A	Method Blank	T	Water	8270C	280-125241
280-30333-1	HUNT CISTERN	T	Water	8270C	280-125241

Report Basis

T = Total

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC VOA					
Analysis Batch:600-83033					
LCS 600-83033/3	Lab Control Sample	T	Water	RSK-175	
MB 600-83033/2	Method Blank	T	Water	RSK-175	
280-30333-1	HUNT CISTERN	T	Water	RSK-175	
280-30378-P-1 MS	Matrix Spike	T	Water	RSK-175	
280-30378-P-1 MSD	Matrix Spike Duplicate	T	Water	RSK-175	
Analysis Batch:280-125437					
LCS 280-125437/3	Lab Control Sample	T	Water	8015B	
LCSD 280-125437/4	Lab Control Sample Duplicate	T	Water	8015B	
MB 280-125437/5	Method Blank	T	Water	8015B	
280-30303-U-3 MS	Matrix Spike	T	Water	8015B	
280-30303-U-3 MSD	Matrix Spike Duplicate	T	Water	8015B	
280-30333-1	HUNT CISTERN	T	Water	8015B	

Report Basis

T = Total

GC Semi VOA

Prep Batch: 280-125259					
LCS 280-125259/2-A	Lab Control Sample	T	Water	3510C	
LCSD 280-125259/3-A	Lab Control Sample Duplicate	T	Water	3510C	
MB 280-125259/1-A	Method Blank	T	Water	3510C	
280-30303-D-3-A MS	Matrix Spike	T	Water	3510C	
280-30303-F-3-A MSD	Matrix Spike Duplicate	T	Water	3510C	
280-30333-1	HUNT CISTERN	T	Water	3510C	
Analysis Batch:280-125910					
LCS 280-125259/2-A	Lab Control Sample	T	Water	8015B	280-125259
LCSD 280-125259/3-A	Lab Control Sample Duplicate	T	Water	8015B	280-125259
MB 280-125259/1-A	Method Blank	T	Water	8015B	280-125259
280-30303-D-3-A MS	Matrix Spike	T	Water	8015B	280-125259
280-30303-F-3-A MSD	Matrix Spike Duplicate	T	Water	8015B	280-125259
280-30333-1	HUNT CISTERN	T	Water	8015B	280-125259

Report Basis

T = Total

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 280-125255					
LCS 280-125231/2-B	Lab Control Sample	D	Water	245.1	
MB 280-125231/1-B	Method Blank	D	Water	245.1	
280-30333-1	HUNT CISTERN	D	Water	245.1	
280-30333-1MS	Matrix Spike	D	Water	245.1	
280-30333-1MSD	Matrix Spike Duplicate	D	Water	245.1	
Prep Batch: 280-125463					
LCS 280-125231/2-C	Lab Control Sample	D	Water	200.7	
MB 280-125231/1-C	Method Blank	D	Water	200.7	
280-30333-1	HUNT CISTERN	D	Water	200.7	
280-30333-1MS	Matrix Spike	D	Water	200.7	
280-30333-1MSD	Matrix Spike Duplicate	D	Water	200.7	
Prep Batch: 280-125466					
LCS 280-125420/2-B	Lab Control Sample	D	Water	200.8	
MB 280-125420/1-B	Method Blank	D	Water	200.8	
280-30333-1	HUNT CISTERN	D	Water	200.8	
280-30378-F-1-D MS	Matrix Spike	D	Water	200.8	
280-30378-F-1-E MSD	Matrix Spike Duplicate	D	Water	200.8	
Analysis Batch:280-125550					
MB 280-125550/1	Method Blank	T	Water	20B	
280-30333-1	HUNT CISTERN	T	Water	20B	
Analysis Batch:280-125577					
LCS 280-125231/2-B	Lab Control Sample	D	Water	245.1	280-125255
MB 280-125231/1-B	Method Blank	D	Water	245.1	280-125255
280-30333-1	HUNT CISTERN	D	Water	245.1	280-125255
280-30333-1MS	Matrix Spike	D	Water	245.1	280-125255
280-30333-1MSD	Matrix Spike Duplicate	D	Water	245.1	280-125255
Analysis Batch:280-125764					
LCS 280-125231/2-C	Lab Control Sample	D	Water	200.7 Rev 4.4	280-125463
MB 280-125231/1-C	Method Blank	D	Water	200.7 Rev 4.4	280-125463
280-30333-1	HUNT CISTERN	D	Water	200.7 Rev 4.4	280-125463
280-30333-1MS	Matrix Spike	D	Water	200.7 Rev 4.4	280-125463
280-30333-1MSD	Matrix Spike Duplicate	D	Water	200.7 Rev 4.4	280-125463
Analysis Batch:280-125775					
LCS 280-125420/2-B	Lab Control Sample	D	Water	200.8	280-125466
MB 280-125420/1-B	Method Blank	D	Water	200.8	280-125466
280-30333-1	HUNT CISTERN	D	Water	200.8	280-125466
280-30378-F-1-D MS	Matrix Spike	D	Water	200.8	280-125466
280-30378-F-1-E MSD	Matrix Spike Duplicate	D	Water	200.8	280-125466

TestAmerica Denver

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
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Report Basis

D = Dissolved

T = Total

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:280-125326					
LCS 280-125326/5	Lab Control Sample	T	Water	SM 4500 H+ B	
LCSD 280-125326/16	Lab Control Sample Duplicate	T	Water	SM 4500 H+ B	
280-30333-1	HUNT CISTERN	T	Water	SM 4500 H+ B	
280-30378-E-1 DU	Duplicate	T	Water	SM 4500 H+ B	
Analysis Batch:280-125394					
LCS 280-125394/4	Lab Control Sample	T	Water	SM 2320B	
LCSD 280-125394/5	Lab Control Sample Duplicate	T	Water	SM 2320B	
MB 280-125394/6	Method Blank	T	Water	SM 2320B	
280-30230-A-2 DU	Duplicate	T	Water	SM 2320B	
280-30333-1	HUNT CISTERN	T	Water	SM 2320B	
Analysis Batch:280-125489					
LCS 280-125489/4	Lab Control Sample	T	Water	300.0	
LCSD 280-125489/5	Lab Control Sample Duplicate	T	Water	300.0	
MB 280-125489/6	Method Blank	T	Water	300.0	
280-30331-G-4 DU	Duplicate	T	Water	300.0	
280-30331-G-4 MS	Matrix Spike	T	Water	300.0	
280-30331-G-4 MSD	Matrix Spike Duplicate	T	Water	300.0	
280-30333-1	HUNT CISTERN	T	Water	300.0	
Analysis Batch:280-125495					
LCS 280-125495/4	Lab Control Sample	T	Water	300.0	
LCSD 280-125495/5	Lab Control Sample Duplicate	T	Water	300.0	
MB 280-125495/6	Method Blank	T	Water	300.0	
280-30331-G-4 MS	Matrix Spike		Water	300.0	
280-30331-G-4 MSD	Matrix Spike Duplicate		Water	300.0	
280-30333-1	HUNT CISTERN	T	Water	300.0	
280-30336-F-1 DU	Duplicate	T	Water	300.0	
Analysis Batch:280-125751					
LCS 280-125751/2	Lab Control Sample	T	Water	SM 2540C	
LCSD 280-125751/3	Lab Control Sample Duplicate	T	Water	SM 2540C	
MB 280-125751/1	Method Blank	T	Water	SM 2540C	
280-30328-A-1 DU	Duplicate	T	Water	SM 2540C	
280-30333-1	HUNT CISTERN	T	Water	SM 2540C	
Analysis Batch:280-125960					
LCS 280-125960/3	Lab Control Sample	T	Water	SM 2510B	
LCSD 280-125960/4	Lab Control Sample Duplicate	T	Water	SM 2510B	
MB 280-125960/5	Method Blank	T	Water	SM 2510B	
280-30209-B-1 DU	Duplicate	T	Water	SM 2510B	
280-30333-1	HUNT CISTERN	T	Water	SM 2510B	

TestAmerica Denver

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:280-126107					
LCS 280-126107/23	Lab Control Sample	T	Water	SM 5310B	
LCSD 280-126107/24	Lab Control Sample Duplicate	T	Water	SM 5310B	
MB 280-126107/25	Method Blank	T	Water	SM 5310B	
280-30328-B-1 MS	Matrix Spike	T	Water	SM 5310B	
280-30328-B-1 MSD	Matrix Spike Duplicate	T	Water	SM 5310B	
280-30333-1	HUNT CISTERN	T	Water	SM 5310B	

Report Basis

T = Total

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Chronicle

Lab ID: 280-30333-1

Client ID: HUNT CISTERN

Sample Date/Time: 06/21/2012 11:15

Received Date/Time: 06/22/2012 09:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	280-30333-M-1		280-126426		06/30/2012 02:16	1	TAL DEN	LMH
A:8260B	280-30333-M-1		280-126426		06/30/2012 02:16	1	TAL DEN	LMH
P:3520C	280-30333-B-1-A		280-126328	280-125241	06/22/2012 14:20	1	TAL DEN	SHO
A:8270C	280-30333-B-1-A		280-126328	280-125241	06/29/2012 14:54	1	TAL DEN	MGH
P:5030B	280-30333-K-1		280-125437		06/22/2012 23:39	1	TAL DEN	AMB
A:8015B	280-30333-K-1		280-125437		06/22/2012 23:39	1	TAL DEN	AMB
A:RSK-175	280-30333-P-1		600-83033		07/02/2012 16:13	1	TAL HOU	JAL
P:3510C	280-30333-C-1-A		280-125910	280-125259	06/22/2012 16:58	1	TAL DEN	SPF
A:8015B	280-30333-C-1-A		280-125910	280-125259	06/27/2012 18:40	1	TAL DEN	AMP
P:200.7	280-30333-I-1-E		280-125764	280-125463	06/26/2012 14:00	1	TAL DEN	JM
A:200.7 Rev 4.4	280-30333-I-1-E		280-125764	280-125463	06/26/2012 23:45	1	TAL DEN	HEB
P:200.8	280-30333-I-1-H		280-125775	280-125466	06/26/2012 14:00	1	TAL DEN	JM
A:200.8	280-30333-I-1-H		280-125775	280-125466	06/27/2012 00:08	1	TAL DEN	TEL
A:20B	280-30333-I-1		280-125550		06/26/2012 07:10	1	TAL DEN	JKH
P:245.1	280-30333-I-1-B		280-125577	280-125255	06/25/2012 12:00	1	TAL DEN	BLR
A:245.1	280-30333-I-1-B		280-125577	280-125255	06/25/2012 14:49	1	TAL DEN	BLR
A:300.0	280-30333-G-1		280-125489		06/22/2012 16:00	5	TAL DEN	EK
A:300.0	280-30333-G-1		280-125495		06/22/2012 16:00	5	TAL DEN	EK
A:300.0	280-30333-G-1		280-125495		06/22/2012 19:45	10	TAL DEN	EK
A:300.0	280-30333-G-1		280-125495		06/22/2012 20:02	100	TAL DEN	EK
A:SM 2320B	280-30333-E-1		280-125394		06/23/2012 08:49	1	TAL DEN	BMG
A:SM 2510B	280-30333-G-1		280-125960		06/28/2012 11:08	1	TAL DEN	JMH
A:SM 2540C	280-30333-G-1		280-125751		06/27/2012 08:19	1	TAL DEN	BJD
A:SM 4500 H+ B	280-30333-G-1		280-125326		06/23/2012 12:08	1	TAL DEN	DA
A:SM 5310B	280-30333-H-1		280-126107		06/28/2012 06:41	1	TAL DEN	DFB

Lab ID: 280-30333-1 MS

Client ID: HUNT CISTERN

Sample Date/Time: 06/21/2012 11:15

Received Date/Time: 06/22/2012 09:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:200.7	280-30333-I-1-F MS		280-125764	280-125463	06/26/2012 14:00	1	TAL DEN	JM
A:200.7 Rev 4.4	280-30333-I-1-F MS		280-125764	280-125463	06/26/2012 23:51	1	TAL DEN	HEB
P:245.1	280-30333-I-1-C MS		280-125577	280-125255	06/25/2012 12:00	1	TAL DEN	BLR
A:245.1	280-30333-I-1-C MS		280-125577	280-125255	06/25/2012 14:51	1	TAL DEN	BLR

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Chronicle

Lab ID: 280-30333-1 MSD

Client ID: HUNT CISTERN

Sample Date/Time: 06/21/2012 11:15

Received Date/Time: 06/22/2012 09:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:200.7	280-30333-I-1-G MSD		280-125764	280-125463	06/26/2012 14:00	1	TAL DEN	JM
A:200.7 Rev 4.4	280-30333-I-1-G MSD		280-125764	280-125463	06/26/2012 23:54	1	TAL DEN	HEB
P:245.1	280-30333-I-1-D MSD		280-125577	280-125255	06/25/2012 12:00	1	TAL DEN	BLR
A:245.1	280-30333-I-1-D MSD		280-125577	280-125255	06/25/2012 14:53	1	TAL DEN	BLR

Lab ID: 280-30333-1 SD

Client ID: HUNT CISTERN

Sample Date/Time: 06/21/2012 11:15

Received Date/Time: 06/22/2012 09:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:200.7	280-30333-I-1-E SD		280-125764	280-125463	06/26/2012 14:00	5	TAL DEN	JM
	^5							
A:200.7 Rev 4.4	280-30333-I-1-E SD		280-125764	280-125463	06/26/2012 23:49	5	TAL DEN	HEB
	^5							

Lab ID: MB

Client ID: N/A

Sample Date/Time: N/A

Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	MB 280-126426/6		280-126426		06/29/2012 21:47	1	TAL DEN	LMH
A:8260B	MB 280-126426/6		280-126426		06/29/2012 21:47	1	TAL DEN	LMH
P:3520C	MB 280-125241/1-A		280-126328	280-125241	06/22/2012 14:20	1	TAL DEN	SHO
A:8270C	MB 280-125241/1-A		280-126328	280-125241	06/29/2012 11:10	1	TAL DEN	MGH
P:5030B	MB 280-125437/5		280-125437		06/22/2012 13:54	1	TAL DEN	AMB
A:8015B	MB 280-125437/5		280-125437		06/22/2012 13:54	1	TAL DEN	AMB
A:RSK-175	MB 600-83033/2		600-83033		07/02/2012 14:38	1	TAL HOU	JAL
P:3510C	MB 280-125259/1-A		280-125910	280-125259	06/22/2012 16:58	1	TAL DEN	SPF
A:8015B	MB 280-125259/1-A		280-125910	280-125259	06/27/2012 15:25	1	TAL DEN	AMP
P:200.7	MB 280-125231/1-C		280-125764	280-125463	06/26/2012 14:00	1	TAL DEN	JM
A:200.7 Rev 4.4	MB 280-125231/1-C		280-125764	280-125463	06/26/2012 23:40	1	TAL DEN	HEB
P:200.8	MB 280-125420/1-B		280-125775	280-125466	06/26/2012 14:00	1	TAL DEN	JM
A:200.8	MB 280-125420/1-B		280-125775	280-125466	06/26/2012 23:45	1	TAL DEN	TEL
A:20B	MB 280-125550/1		280-125550		06/26/2012 07:10	1	TAL DEN	JKH
P:245.1	MB 280-125231/1-B		280-125577	280-125255	06/25/2012 12:00	1	TAL DEN	BLR
A:245.1	MB 280-125231/1-B		280-125577	280-125255	06/25/2012 14:42	1	TAL DEN	BLR
A:300.0	MB 280-125489/6		280-125489		06/22/2012 10:00	1	TAL DEN	EK
A:300.0	MB 280-125495/6		280-125495		06/22/2012 10:00	1	TAL DEN	EK
A:SM 2320B	MB 280-125394/6		280-125394		06/23/2012 08:40	1	TAL DEN	BMG
A:SM 2510B	MB 280-125960/5		280-125960		06/28/2012 11:08	1	TAL DEN	JMH
A:SM 2540C	MB 280-125751/1		280-125751		06/27/2012 08:19	1	TAL DEN	BJD
A:SM 5310B	MB 280-126107/25		280-126107		06/28/2012 03:39	1	TAL DEN	DFB

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Chronicle

Lab ID: LCS

Client ID: N/A

Sample Date/Time: N/A

Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	LCS 280-126426/5		280-126426		06/29/2012 21:27	1	TAL DEN	LMH
A:8260B	LCS 280-126426/5		280-126426		06/29/2012 21:27	1	TAL DEN	LMH
P:3520C	LCS 280-125241/2-A		280-126328	280-125241	06/22/2012 14:20	1	TAL DEN	SHO
A:8270C	LCS 280-125241/2-A		280-126328	280-125241	06/29/2012 11:31	1	TAL DEN	MGH
P:5030B	LCS 280-125437/3		280-125437		06/22/2012 12:47	1	TAL DEN	AMB
A:8015B	LCS 280-125437/3		280-125437		06/22/2012 12:47	1	TAL DEN	AMB
A:RSK-175	LCS 600-83033/3		600-83033		07/02/2012 14:52	1	TAL HOU	JAL
P:3510C	LCS 280-125259/2-A		280-125910	280-125259	06/22/2012 16:58	1	TAL DEN	SPF
A:8015B	LCS 280-125259/2-A		280-125910	280-125259	06/27/2012 15:49	1	TAL DEN	AMP
P:200.7	LCS 280-125231/2-C		280-125764	280-125463	06/26/2012 14:00	1	TAL DEN	JM
A:200.7 Rev 4.4	LCS 280-125231/2-C		280-125764	280-125463	06/26/2012 23:43	1	TAL DEN	HEB
P:200.8	LCS 280-125420/2-B		280-125775	280-125466	06/26/2012 14:00	1	TAL DEN	JM
A:200.8	LCS 280-125420/2-B		280-125775	280-125466	06/26/2012 23:48	1	TAL DEN	TEL
P:245.1	LCS 280-125231/2-B		280-125577	280-125255	06/25/2012 12:00	1	TAL DEN	BLR
A:245.1	LCS 280-125231/2-B		280-125577	280-125255	06/25/2012 14:45	1	TAL DEN	BLR
A:300.0	LCS 280-125489/4		280-125489		06/22/2012 09:25	1	TAL DEN	EK
A:300.0	LCS 280-125495/4		280-125495		06/22/2012 09:25	1	TAL DEN	EK
A:SM 2320B	LCS 280-125394/4		280-125394		06/23/2012 08:31	1	TAL DEN	BMG
A:SM 2510B	LCS 280-125960/3		280-125960		06/28/2012 11:08	1	TAL DEN	JMH
A:SM 2540C	LCS 280-125751/2		280-125751		06/27/2012 08:19	1	TAL DEN	BJD
A:SM 4500 H+ B	LCS 280-125326/5		280-125326		06/23/2012 11:58	1	TAL DEN	DA
A:SM 5310B	LCS 280-126107/23		280-126107		06/28/2012 03:01	1	TAL DEN	DFB

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Chronicle

Lab ID: LCSD

Client ID: N/A

Sample Date/Time: N/A

Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	LCSD 280-126426/7		280-126426		06/29/2012 23:17	1	TAL DEN	LMH
A:8260B	LCSD 280-126426/7		280-126426		06/29/2012 23:17	1	TAL DEN	LMH
P:3520C	LCSD 280-125241/3-A		280-126328	280-125241	06/22/2012 14:20	1	TAL DEN	SHO
A:8270C	LCSD 280-125241/3-A		280-126328	280-125241	06/29/2012 11:51	1	TAL DEN	MGH
P:5030B	LCSD 280-125437/4		280-125437		06/22/2012 13:20	1	TAL DEN	AMB
A:8015B	LCSD 280-125437/4		280-125437		06/22/2012 13:20	1	TAL DEN	AMB
P:3510C	LCSD 280-125259/3-A		280-125910	280-125259	06/22/2012 16:58	1	TAL DEN	SPF
A:8015B	LCSD 280-125259/3-A		280-125910	280-125259	06/27/2012 16:13	1	TAL DEN	AMP
A:300.0	LCSD 280-125489/5		280-125489		06/22/2012 09:43	1	TAL DEN	EK
A:300.0	LCSD 280-125495/5		280-125495		06/22/2012 09:43	1	TAL DEN	EK
A:SM 2320B	LCSD 280-125394/5		280-125394		06/23/2012 08:36	1	TAL DEN	BMG
A:SM 2510B	LCSD 280-125960/4		280-125960		06/28/2012 11:08	1	TAL DEN	JMH
A:SM 2540C	LCSD 280-125751/3		280-125751		06/27/2012 08:19	1	TAL DEN	BJD
A:SM 4500 H+ B	LCSD 280-125326/16		280-125326		06/23/2012 12:19	1	TAL DEN	DA
A:SM 5310B	LCSD 280-126107/24		280-126107		06/28/2012 03:20	1	TAL DEN	DFB

Lab ID: MRL

Client ID: N/A

Sample Date/Time: N/A

Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	MRL 280-125489/3		280-125489		06/22/2012 09:08	1	TAL DEN	EK
A:300.0	MRL 280-125495/3		280-125495		06/22/2012 09:08	1	TAL DEN	EK

Lab ID: MS

Client ID: N/A

Sample Date/Time: N/A

Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	280-30487-B-1 MS		280-126426		06/30/2012 00:39	1	TAL DEN	LMH
A:8260B	280-30487-B-1 MS		280-126426		06/30/2012 00:39	1	TAL DEN	LMH
P:5030B	280-30303-U-3 MS		280-125437		06/22/2012 16:54	1	TAL DEN	AMB
A:8015B	280-30303-U-3 MS		280-125437		06/22/2012 16:54	1	TAL DEN	AMB
A:RSK-175	280-30378-P-1 MS		600-83033		07/02/2012 17:29	1	TAL HOU	JAL
P:3510C	280-30303-D-3-A MS		280-125910	280-125259	06/22/2012 16:58	1	TAL DEN	SPF
A:8015B	280-30303-D-3-A MS		280-125910	280-125259	06/27/2012 17:27	1	TAL DEN	AMP
P:200.8	280-30378-F-1-D MS		280-125775	280-125466	06/26/2012 14:00	1	TAL DEN	JM
A:200.8	280-30378-F-1-D MS		280-125775	280-125466	06/26/2012 23:54	1	TAL DEN	TEL
A:300.0	280-30331-G-4 MS		280-125489		06/22/2012 15:25	1	TAL DEN	EK
A:300.0	280-30331-G-4 MS		280-125495		06/22/2012 15:25	1	TAL DEN	EK
A:SM 5310B	280-30328-B-1 MS		280-126107		06/28/2012 04:13	1	TAL DEN	DFB

TestAmerica Denver

A = Analytical Method P = Prep Method

Quality Control Results

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Laboratory Chronicle

Lab ID: MSD

Client ID: N/A

Sample Date/Time: N/A

Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	280-30487-A-1 MSD		280-126426		06/30/2012 00:58	1	TAL DEN	LMH
A:8260B	280-30487-A-1 MSD		280-126426		06/30/2012 00:58	1	TAL DEN	LMH
P:5030B	280-30303-U-3 MSD		280-125437		06/22/2012 17:28	1	TAL DEN	AMB
A:8015B	280-30303-U-3 MSD		280-125437		06/22/2012 17:28	1	TAL DEN	AMB
A:RSK-175	280-30378-P-1 MSD		600-83033		07/02/2012 17:46	1	TAL HOU	JAL
P:3510C	280-30303-F-3-A MSD		280-125910	280-125259	06/22/2012 16:58	1	TAL DEN	SPF
A:8015B	280-30303-F-3-A MSD		280-125910	280-125259	06/27/2012 17:51	1	TAL DEN	AMP
P:200.8	280-30378-F-1-E MSD		280-125775	280-125466	06/26/2012 14:00	1	TAL DEN	JM
A:200.8	280-30378-F-1-E MSD		280-125775	280-125466	06/26/2012 23:57	1	TAL DEN	TEL
A:300.0	280-30331-G-4 MSD		280-125489		06/22/2012 15:43	1	TAL DEN	EK
A:300.0	280-30331-G-4 MSD		280-125495		06/22/2012 15:43	1	TAL DEN	EK
A:SM 5310B	280-30328-B-1 MSD		280-126107		06/28/2012 05:09	1	TAL DEN	DFB

Lab ID: DU

Client ID: N/A

Sample Date/Time: N/A

Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	280-30331-G-4 DU		280-125489		06/22/2012 15:08	1	TAL DEN	EK
A:300.0	280-30336-F-1 DU		280-125495		06/22/2012 16:35	1	TAL DEN	EK
A:300.0	280-30336-F-1 DU		280-125495		06/22/2012 20:37	10	TAL DEN	EK
A:SM 2320B	280-30230-A-2 DU		280-125394		06/23/2012 10:06	1	TAL DEN	BMG
A:SM 2510B	280-30209-B-1 DU		280-125960		06/28/2012 11:08	1	TAL DEN	JMH
A:SM 2540C	280-30328-A-1 DU		280-125751		06/27/2012 08:19	1	TAL DEN	BJD
A:SM 4500 H+ B	280-30378-E-1 DU		280-125326		06/23/2012 12:00	1	TAL DEN	DA

Lab References:

TAL DEN = TestAmerica Denver

TAL HOU = TestAmerica Houston

Certification Summary

Client: Colorado Oil&Gas Conservation Commission
Project/Site: Hunt Residence Silt, CO

TestAmerica Job ID: 280-30333-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Denver	A2LA	DoD ELAP		2907.01
TestAmerica Denver	A2LA	ISO/IEC 17025		2907.01
TestAmerica Denver	Alabama	State Program	4	40730
TestAmerica Denver	Alaska (UST)	State Program	10	UST-30
TestAmerica Denver	Arizona	State Program	9	AZ0713
TestAmerica Denver	Arkansas DEQ	State Program	6	88-0687
TestAmerica Denver	California	State Program	9	2513
TestAmerica Denver	Colorado	State Program	8	N/A
TestAmerica Denver	Connecticut	State Program	1	PH-0686
TestAmerica Denver	Florida	NELAC	4	E87667
TestAmerica Denver	Georgia	State Program	4	N/A
TestAmerica Denver	Idaho	State Program	10	CO00026
TestAmerica Denver	Illinois	NELAC	5	200017
TestAmerica Denver	Iowa	State Program	7	370
TestAmerica Denver	Kansas	NELAC	7	E-10166
TestAmerica Denver	Louisiana	NELAC	6	30785
TestAmerica Denver	Maine	State Program	1	CO0002
TestAmerica Denver	Maryland	State Program	3	268
TestAmerica Denver	Minnesota	NELAC	5	8-999-405
TestAmerica Denver	Nevada	State Program	9	CO0026
TestAmerica Denver	New Jersey	NELAC	2	CO004
TestAmerica Denver	New Mexico	State Program	6	N/A
TestAmerica Denver	New York	NELAC	2	11964
TestAmerica Denver	North Carolina DENR	State Program	4	358
TestAmerica Denver	North Dakota	State Program	8	R-034
TestAmerica Denver	Oklahoma	State Program	6	8614
TestAmerica Denver	Oregon	NELAC	10	CO200001
TestAmerica Denver	Pennsylvania	NELAC	3	68-00664
TestAmerica Denver	South Carolina	State Program	4	72002
TestAmerica Denver	Tennessee	State Program	4	TN02944
TestAmerica Denver	Texas	NELAC	6	T104704183-08-TX
TestAmerica Denver	USDA	Federal		P330-08-00036
TestAmerica Denver	Utah	NELAC	8	QUAN5
TestAmerica Denver	Virginia	NELAC	3	
TestAmerica Denver	Washington	State Program	10	C1284
TestAmerica Denver	West Virginia DEP	State Program	3	354
TestAmerica Denver	Wisconsin	State Program	5	999615430
TestAmerica Denver	Wyoming (UST)	A2LA	8	
TestAmerica Houston	Arkansas DEQ	State Program	6	88-0759
TestAmerica Houston	Oklahoma	State Program	6	9503
TestAmerica Houston	Texas	NELAC	6	T104704223-10-6-TX
TestAmerica Houston	USDA	Federal		P330-08-00217
TestAmerica Houston	Utah	NELAC	8	GULF

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Method 8260B

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

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1

Matrix: Water Lab File ID: P9189.D

Analysis Method: 8260B Date Collected: 06/21/2012 11:15

Sample wt/vol: 20 (mL) Date Analyzed: 06/30/2012 02:16

Soil Aliquot Vol: _____ Dilution Factor: 1

Soil Extract Vol.: _____ GC Column: DB-624 (60.25) ID: 0.25 (mm)

% Moisture: _____ Level: (low/med) Low

Analysis Batch No.: 126426 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
630-20-6	1,1,1,2-Tetrachloroethane	ND		1.0	0.21
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.16
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.21
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.27
75-34-3	1,1-Dichloroethane	ND		1.0	0.22
75-35-4	1,1-Dichloroethene	ND		1.0	0.23
563-58-6	1,1-Dichloropropene	ND		1.0	0.19
87-61-6	1,2,3-Trichlorobenzene	ND		1.0	0.21
96-18-4	1,2,3-Trichloropropane	ND		2.5	0.33
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.21
95-63-6	1,2,4-Trimethylbenzene	ND		1.0	0.15
96-12-8	1,2-Dibromo-3-Chloropropane	ND		5.0	0.47
106-93-4	1,2-Dibromoethane	ND		1.0	0.18
95-50-1	1,2-Dichlorobenzene	ND		1.0	0.15
107-06-2	1,2-Dichloroethane	ND		1.0	0.13
540-59-0	1,2-Dichloroethene, Total	ND		1.0	0.24
78-87-5	1,2-Dichloropropane	ND		1.0	0.18
108-67-8	1,3,5-Trimethylbenzene	ND		1.0	0.16
541-73-1	1,3-Dichlorobenzene	ND		1.0	0.13
142-28-9	1,3-Dichloropropane	ND		1.0	0.22
106-46-7	1,4-Dichlorobenzene	ND		1.0	0.16
594-20-7	2,2-Dichloropropane	ND		1.0	0.18
78-93-3	2-Butanone (MEK)	ND		6.0	2.0
95-49-8	2-Chlorotoluene	ND		1.0	0.17
591-78-6	2-Hexanone	ND		5.0	1.7
106-43-4	4-Chlorotoluene	ND		1.0	0.21
99-87-6	4-Isopropyltoluene	ND		1.0	0.20
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		5.0	0.98
67-64-1	Acetone	ND		10	1.9
71-43-2	Benzene	ND		1.0	0.16
108-86-1	Bromobenzene	ND		1.0	0.17
75-25-2	Bromoform	ND		1.0	0.19
74-83-9	Bromomethane	ND		2.0	0.21
56-23-5	Carbon tetrachloride	ND		1.0	0.19
108-90-7	Chlorobenzene	ND		1.0	0.17
74-97-5	Chlorobromomethane	ND		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1

Matrix: Water Lab File ID: P9189.D

Analysis Method: 8260B Date Collected: 06/21/2012 11:15

Sample wt/vol: 20 (mL) Date Analyzed: 06/30/2012 02:16

Soil Aliquot Vol: _____ Dilution Factor: 1

Soil Extract Vol.: _____ GC Column: DB-624 (60.25) ID: 0.25 (mm)

% Moisture: _____ Level: (low/med) Low

Analysis Batch No.: 126426 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
124-48-1	Chlorodibromomethane	ND		1.0	0.17
75-00-3	Chloroethane	ND		2.0	0.41
67-66-3	Chloroform	ND		1.0	0.16
74-87-3	Chloromethane	ND		2.0	0.30
156-59-2	cis-1,2-Dichloroethene	ND		1.0	0.15
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.16
74-95-3	Dibromomethane	ND		1.0	0.17
75-27-4	Dichlorobromomethane	ND		1.0	0.17
75-71-8	Dichlorodifluoromethane	ND		2.0	0.31
100-41-4	Ethylbenzene	ND		1.0	0.16
87-68-3	Hexachlorobutadiene	ND		1.0	0.36
98-82-8	Isopropylbenzene	ND		1.0	0.19
1634-04-4	Methyl tert-butyl ether	ND		5.0	0.25
75-09-2	Methylene Chloride	0.49	J B	2.0	0.32
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.34
91-20-3	Naphthalene	ND		1.0	0.22
104-51-8	n-Butylbenzene	ND		1.0	0.32
103-65-1	N-Propylbenzene	ND		1.0	0.16
95-47-6	o-Xylene	ND		1.0	0.19
135-98-8	sec-Butylbenzene	ND		1.0	0.17
100-42-5	Styrene	ND		1.0	0.17
98-06-6	tert-Butylbenzene	ND		1.0	0.16
127-18-4	Tetrachloroethene	ND		1.0	0.20
108-88-3	Toluene	ND		1.0	0.17
156-60-5	trans-1,2-Dichloroethene	ND		1.0	0.15
10061-02-6	trans-1,3-Dichloropropene	ND		3.0	0.19
79-01-6	Trichloroethene	ND		1.0	0.16
75-69-4	Trichlorofluoromethane	ND		2.0	0.29
75-01-4	Vinyl chloride	ND		1.0	0.10
1330-20-7	Xylenes, Total	ND		2.0	0.19

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1
SDG No.: _____
Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1
Matrix: Water Lab File ID: P9189.D
Analysis Method: 8260B Date Collected: 06/21/2012 11:15
Sample wt/vol: 20 (mL) Date Analyzed: 06/30/2012 02:16
Soil Aliquot Vol: _____ Dilution Factor: 1
Soil Extract Vol.: _____ GC Column: DB-624 (60.25) ID: 0.25 (mm)
% Moisture: _____ Level: (low/med) Low
Analysis Batch No.: 126426 Units: ug/L

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	90		70-127
460-00-4	4-Bromofluorobenzene (Surr)	110		78-120
1868-53-7	Dibromofluoromethane (Surr)	98		77-120
2037-26-5	Toluene-d8 (Surr)	102		80-125

Laboratory Name

VOLATILE REPORT SW-846

Data file : \\DenSvr03\Public\chem\MSV\P.i\062912P.B\P9189.D
 Lab Smp Id: 280-30333-M-1 Client Smp ID: HUNT CISTERN
 Inj Date : 30-JUN-2012 02:16
 Operator : HUBBSL Inst ID: P.i
 Smp Info : 280-30333-m-1,,PH<2 AF
 Misc Info : 280-30333-M-1
 Comment :
 Method : \\DenSvr03\Public\chem\MSV\P.i\062912P.B\8260B-H2O.m
 Meth Date : 30-Jun-2012 00:15 P.i Quant Type: ISTD
 Cal Date : 13-JUN-2012 09:17 Cal File: P8651.D
 Als bottle: 2
 Dil Factor: 1.00000
 Integrator: HP RTE Compound Sublist: TALS.sub
 Target Version: 4.14
 Processing Host: DENPC252

Concentration Formula: Amt * DF * Vp/Vs * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vp	20.000	Purge Volume (mL)
Vs	20.000	Sample Volume purged (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG	CONCENTRATIONS					
		RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
*****	****	****	*****	*****	*****	*****	*****
* 70 Fluorobenzene	96	7.968	7.974	(1.000)	2337687	12.5000	
* 96 Chlorobenzene-d5	119	10.220	10.227	(1.000)	442917	12.5000	
* 122 1,4-Dichlorobenzene-d4	152	12.100	12.107	(1.000)	557902	12.5000	(Q)
\$ 59 Dibromofluoromethane (Surr)	111	7.417	7.424	(0.931)	461543	12.7744	12.7744
\$ 65 1,2-Dichloroethane-d4	65	7.717	7.724	(0.969)	377928	11.7047	11.7047
\$ 84 Toluene-d8	98	9.126	9.126	(0.893)	2149087	13.2721	13.2721
\$ 107 4-Bromofluorobenzene (Surr)	95	11.099	11.106	(0.917)	624255	14.2454	14.2454
M 1 1,2-Dichloroethene (total)	96	Compound Not Detected.					
M 2 Xylene (total)	106	Compound Not Detected.					
5 dichlorodifluoromethane	85	Compound Not Detected.					
6 1,2-Dichlorotetrafluoroethane	85	Compound Not Detected.					
7 Chloromethane	50	Compound Not Detected.					
8 Vinyl Chloride	62	Compound Not Detected.					
9 Ethylene Oxide	43	Compound Not Detected.					
10 Bromomethane	94	Compound Not Detected.					
11 Chloroethane	64	Compound Not Detected.					
12 Dichlorofluoromethane	67	Compound Not Detected.					
14 Trichlorofluoromethane	101	Compound Not Detected.					
13 Ethanol	45	Compound Not Detected.					
15 1,2-dichloro-1,1,2-trifluoroe	117	Compound Not Detected.					
17 Ethyl Ether	59	Compound Not Detected.					
16 2,2-dichloro-1,1,1-trifluoroe	83	Compound Not Detected.					

Compounds	QUANT	SIG					CONCENTRATIONS	
			RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
=====	=====	=====	=====	=====	=====	=====	=====	=====
19 Acrolein	56		Compound Not Detected.					
20 Acetone	43		Compound Not Detected.					
21 Trichlorotrifluoroethane	151		Compound Not Detected.					
22 2-propanol	45		Compound Not Detected.					
23 1,1-Dichloroethene	96		Compound Not Detected.					
27 Iodomethane	142		Compound Not Detected.					
26 Acetonitrile	41		Compound Not Detected.					
28 Methyl Acetate	43		Compound Not Detected.					
31 Carbon Disulfide	76		Compound Not Detected.					
29 Allyl Chloride	41		Compound Not Detected.					
30 tert-Butyl alcohol	59		Compound Not Detected.					
33 Methylene Chloride	84		6.080	6.086	(0.763)	21994	0.48728	0.487278(a)
34 Acrylonitrile	53		Compound Not Detected.					
35 Methyl t-butyl ether	73		Compound Not Detected.					
36 trans-1,2-Dichloroethene	96		Compound Not Detected.					
40 Hexane	57		Compound Not Detected.					
42 Vinyl acetate	43		Compound Not Detected.					
43 sec-Butyl Alcohol	45		Compound Not Detected.					
44 Isopropyl ether	87		Compound Not Detected.					
45 1,1-Dichloroethane	63		Compound Not Detected.					
47 Chloroprene	53		Compound Not Detected.					
49 ETBE	59		Compound Not Detected.					
51 2-Butanone	43		Compound Not Detected.					
50 Ethyl Acetate	43		Compound Not Detected.					
53 cis-1,2-Dichloroethene	96		Compound Not Detected.					
52 Propionitrile	54		Compound Not Detected.					
54 2,2-Dichloropropane	77		Compound Not Detected.					
55 Methacrylonitrile	41		Compound Not Detected.					
56 Bromochloromethane	128		Compound Not Detected.					
57 Chloroform	83		Compound Not Detected.					
58 Tetrahydrofuran	42		Compound Not Detected.					
61 1,1,1-Trichloroethane	97		Compound Not Detected.					
60 Isobutanol	41		Compound Not Detected.					
62 Cyclohexane	56		Compound Not Detected.					
63 1,1-Dichloropropene	75		Compound Not Detected.					
64 Carbon Tetrachloride	117		Compound Not Detected.					
66 1,2-Dichloroethane	62		Compound Not Detected.					
68 Benzene	78		Compound Not Detected.					
67 TAME	73		Compound Not Detected.					
69 n-Butanol	56		Compound Not Detected.					
72 Trichloroethene	130		Compound Not Detected.					
73 2-Pentanone	43		Compound Not Detected.					
74 Methyl Methacrylate	100		Compound Not Detected.					
75 1,2-Dichloropropane	63		Compound Not Detected.					
76 Methyl Cyclohexane	55		Compound Not Detected.					
77 1,4-Dioxane	88		Compound Not Detected.					
78 Dibromomethane	93		Compound Not Detected.					
79 Bromodichloromethane	83		Compound Not Detected.					
80 2-nitropropane	41		Compound Not Detected.					
81 2-Chloroethyl vinyl ether	63		Compound Not Detected.					
82 cis-1,3-Dichloropropene	75		Compound Not Detected.					
83 4-Methyl-2-pentanone	43		Compound Not Detected.					
85 Toluene	91		Compound Not Detected.					
87 trans-1,3-Dichloropropene	75		Compound Not Detected.					

Compounds	QUANT SIG						CONCENTRATIONS	
		RT	EXP RT	REL RT	RESPONSE		ON-COLUMN (ug/L)	FINAL (ug/L)
=====	=====	=====	=====	=====	=====		=====	=====
86 Ethyl methacrylate	69				Compound Not Detected.			
88 1,1,2-Trichloroethane	97				Compound Not Detected.			
89 2-Hexanone	43				Compound Not Detected.			
90 1,3-Dichloropropane	76				Compound Not Detected.			
91 Tetrachloroethene	164				Compound Not Detected.			
92 Dibromochloromethane	129				Compound Not Detected.			
93 Tetrahydrothiophene	60				Compound Not Detected.			
94 1,2-Dibromoethane	107				Compound Not Detected.			
95 1-Chlorohexane	91				Compound Not Detected.			
97 Chlorobenzene	112				Compound Not Detected.			
98 1,1,1,2-Tetrachloroethane	131				Compound Not Detected.			
99 Ethylbenzene	106				Compound Not Detected.			
100 m and p-Xylene	106				Compound Not Detected.			
102 o-Xylene	106				Compound Not Detected.			
101 Styrene	104				Compound Not Detected.			
103 Bromoform	173				Compound Not Detected.			
104 isopropyl benzene	105				Compound Not Detected.			
105 cis-1,4-dichloro-2-butene	53				Compound Not Detected.			
106 Cyclohexanone	55				Compound Not Detected.			
108 1,1,2,2-Tetrachloroethane	83				Compound Not Detected.			
109 t-1,4-Dichloro-2-butene	53				Compound Not Detected.			
110 1,2,3-Trichloropropane	110				Compound Not Detected.			
112 Bromobenzene	156				Compound Not Detected.			
111 n-Propylbenzene	120				Compound Not Detected.			
114 2-Chlorotoluene	126				Compound Not Detected.			
113 1,3,5-Trimethylbenzene	105				Compound Not Detected.			
115 4-Chlorotoluene	126				Compound Not Detected.			
116 tert-Butylbenzene	119				Compound Not Detected.			
117 1,2,4-Trimethylbenzene	105				Compound Not Detected.			
119 sec-Butylbenzene	134				Compound Not Detected.			
120 4-Isopropyltoluene	119				Compound Not Detected.			
121 1,3-Dichlorobenzene	146				Compound Not Detected.			
123 1,4-dichlorobenzene	146				Compound Not Detected.			
124 1,2,3-Trimethylbenzene	105				Compound Not Detected.			
125 n-Butylbenzene	91				Compound Not Detected.			
127 1,2-Dichlorobenzene	146				Compound Not Detected.			
128 1,2-Dibromo-3-chloropropane	157				Compound Not Detected.			
130 1,2,4-Trichlorobenzene	180				Compound Not Detected.			
131 Hexachlorobutadiene	225				Compound Not Detected.			
132 Naphthalene	128				Compound Not Detected.			
133 1,2,3-Trichlorobenzene	180				Compound Not Detected.			

QC Flag Legend

- a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
- Q - Qualifier signal failed the ratio test.

Data File: P9189.D

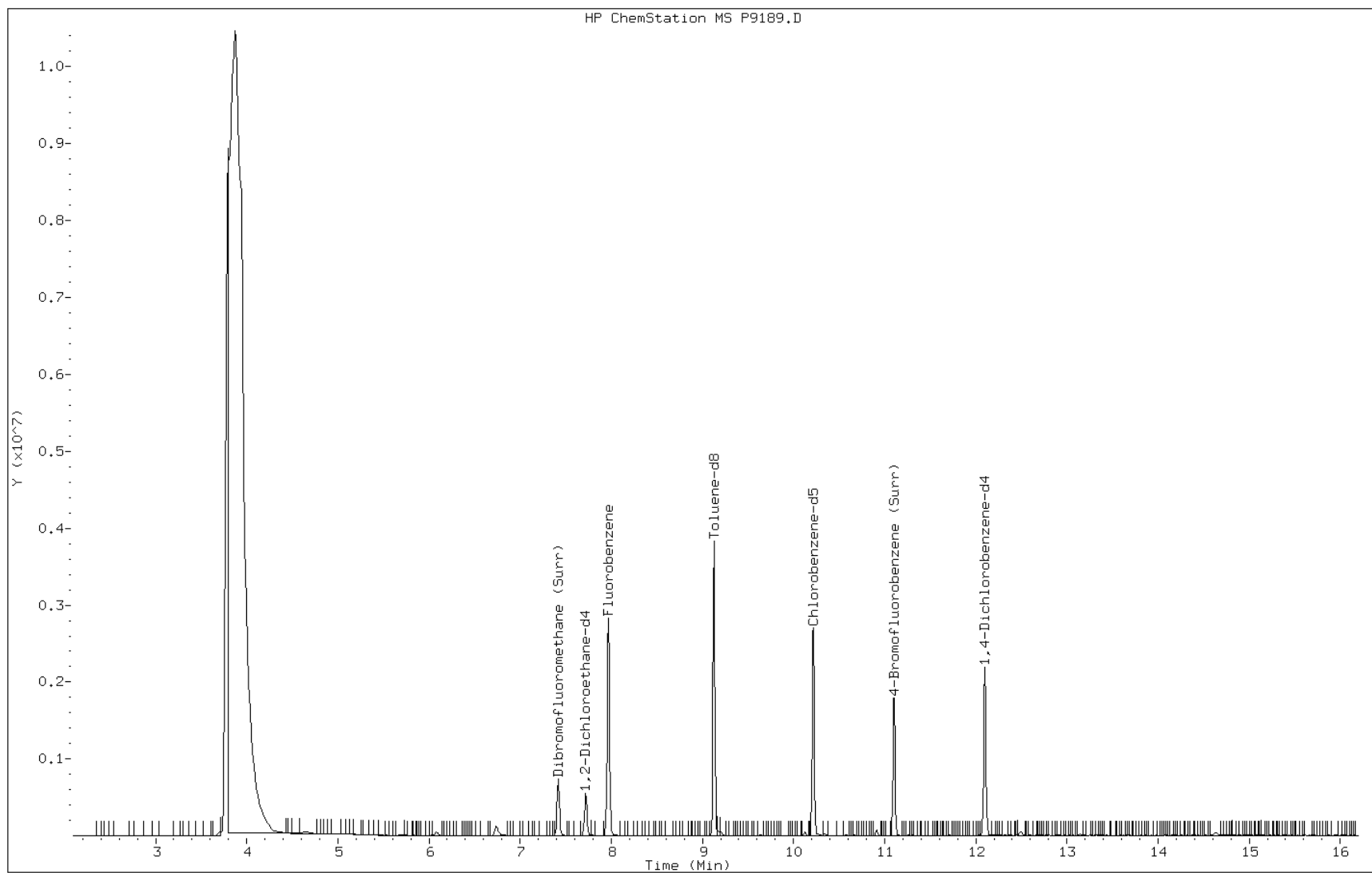
Date: 30-JUN-2012 02:16

Client ID: HUNT CISTERN

Instrument: P.i

Sample Info: 280-30333-m-1,,PH<2 AF

Operator: HUBBSL



Data File: P9189.D

Date: 30-JUN-2012 02:16

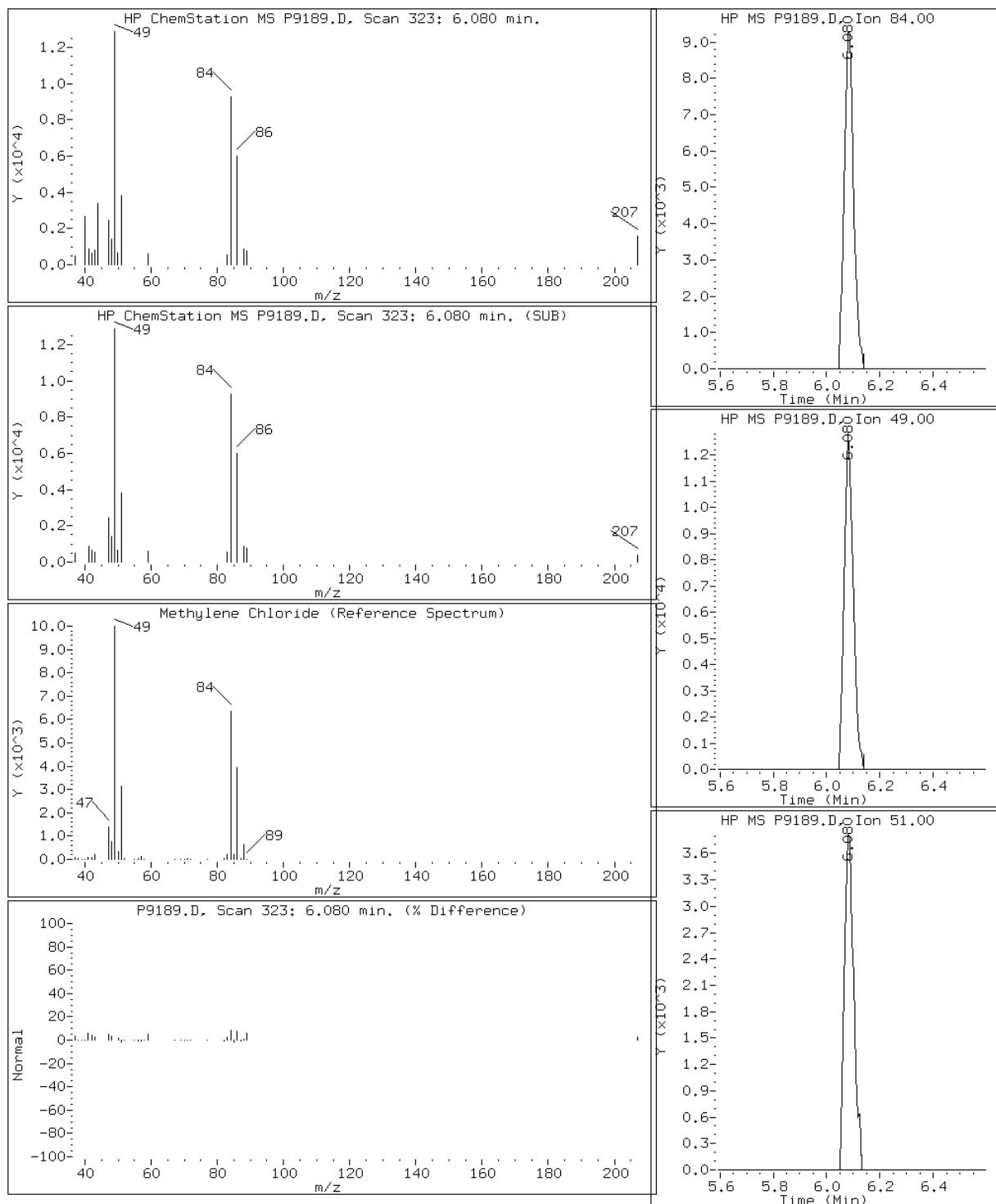
Client ID: HUNT CISTERN

Instrument: P.i

Sample Info: 280-30333-m-1,,PH<2 AF

Operator: HUBBSL

33 Methylene Chloride



Method 8270C

Semivolatile Organic Compounds
(GC/MS) by Method 8270C

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1

Matrix: Water Lab File ID: Y8518.D

Analysis Method: 8270C Date Collected: 06/21/2012 11:15

Extract. Method: 3520C Date Extracted: 06/22/2012 14:20

Sample wt/vol: 1056.5(mL) Date Analyzed: 06/29/2012 14:54

Con. Extract Vol.: 1000(uL) Dilution Factor: 1

Injection Volume: 0.5(uL) Level: (low/med) Low

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 126328 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
108-60-1	2,2'-oxybis[1-chloropropane]	ND		9.5	0.27
95-95-4	2,4,5-Trichlorophenol	ND		9.5	0.43
88-06-2	2,4,6-Trichlorophenol	ND		9.5	0.27
120-83-2	2,4-Dichlorophenol	ND		9.5	0.61
105-67-9	2,4-Dimethylphenol	ND		9.5	0.55
51-28-5	2,4-Dinitrophenol	ND		28	9.5
121-14-2	2,4-Dinitrotoluene	ND		9.5	1.6
606-20-2	2,6-Dinitrotoluene	ND		9.5	1.8
91-58-7	2-Chloronaphthalene	ND		3.8	0.25
95-57-8	2-Chlorophenol	ND		9.5	1.9
91-57-6	2-Methylnaphthalene	ND		3.8	0.27
95-48-7	2-Methylphenol	ND		9.5	0.93
88-74-4	2-Nitroaniline	ND		9.5	1.6
88-75-5	2-Nitrophenol	ND		9.5	0.37
15831-10-4	3 & 4 Methylphenol	ND		9.5	0.24
91-94-1	3,3'-Dichlorobenzidine	ND		47	1.9
99-09-2	3-Nitroaniline	ND		9.5	1.9
534-52-1	4,6-Dinitro-2-methylphenol	ND		47	3.8
101-55-3	4-Bromophenyl phenyl ether	ND		9.5	0.41
59-50-7	4-Chloro-3-methylphenol	ND		9.5	2.3
106-47-8	4-Chloroaniline	ND		9.5	2.0
7005-72-3	4-Chlorophenyl phenyl ether	ND		9.5	1.6
100-01-6	4-Nitroaniline	ND		9.5	1.9
100-02-7	4-Nitrophenol	ND		9.5	1.2
83-32-9	Acenaphthene	ND		3.8	0.27
208-96-8	Acenaphthylene	ND		3.8	0.46
98-86-2	Acetophenone	ND		9.5	0.23
120-12-7	Anthracene	ND		3.8	0.40
1912-24-9	Atrazine	ND		9.5	0.69
92-87-5	Benzidine	ND		95	47
56-55-3	Benzo[a]anthracene	ND		3.8	0.33
50-32-8	Benzo[a]pyrene	ND		3.8	0.29
205-99-2	Benzo[b]fluoranthene	ND		3.8	0.50
191-24-2	Benzo[g,h,i]perylene	ND		3.8	0.47

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1

SDG No.: _____

Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1

Matrix: Water Lab File ID: Y8518.D

Analysis Method: 8270C Date Collected: 06/21/2012 11:15

Extract. Method: 3520C Date Extracted: 06/22/2012 14:20

Sample wt/vol: 1056.5 (mL) Date Analyzed: 06/29/2012 14:54

Con. Extract Vol.: 1000 (uL) Dilution Factor: 1

Injection Volume: 0.5 (uL) Level: (low/med) Low

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 126328 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
207-08-9	Benzo[k]fluoranthene	ND		3.8	0.44
111-91-1	Bis(2-chloroethoxy)methane	ND		9.5	0.92
111-44-4	Bis(2-chloroethyl) ether	ND		9.5	0.39
117-81-7	Bis(2-ethylhexyl) phthalate	ND		9.5	0.53
85-68-7	Butyl benzyl phthalate	ND		3.8	0.95
105-60-2	Caprolactam	ND		9.5	4.7
86-74-8	Carbazole	ND		3.8	0.41
218-01-9	Chrysene	ND		3.8	0.51
1319-77-3	Cresols, Total	ND		9.5	0.24
53-70-3	Dibenz(a,h)anthracene	ND		3.8	0.48
132-64-9	Dibenzofuran	ND		3.8	0.27
84-66-2	Diethyl phthalate	ND		3.8	0.36
131-11-3	Dimethyl phthalate	ND		3.8	0.20
84-74-2	Di-n-butyl phthalate	ND		3.8	1.1
117-84-0	Di-n-octyl phthalate	ND		3.8	0.33
206-44-0	Fluoranthene	ND		3.8	0.19
86-73-7	Fluorene	ND		3.8	0.29
118-74-1	Hexachlorobenzene	ND		9.5	0.62
87-68-3	Hexachlorobutadiene	ND		9.5	3.1
77-47-4	Hexachlorocyclopentadiene	ND		47	9.5
67-72-1	Hexachloroethane	ND		9.5	2.0
193-39-5	Indeno[1,2,3-cd]pyrene	ND		3.8	0.62
91-20-3	Naphthalene	ND		3.8	0.27
98-95-3	Nitrobenzene	ND		9.5	0.77
621-64-7	N-Nitrosodi-n-propylamine	ND		9.5	0.33
86-30-6	n-Nitrosodiphenylamine (as diphenylamine)	ND		9.5	0.42
87-86-5	Pentachlorophenol	ND		47	19
85-01-8	Phenanthrene	ND		3.8	0.25
108-95-2	Phenol	ND		9.5	1.9
129-00-0	Pyrene	ND		9.5	0.35

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1
SDG No.: _____
Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1
Matrix: Water Lab File ID: Y8518.D
Analysis Method: 8270C Date Collected: 06/21/2012 11:15
Extract. Method: 3520C Date Extracted: 06/22/2012 14:20
Sample wt/vol: 1056.5(mL) Date Analyzed: 06/29/2012 14:54
Con. Extract Vol.: 1000(uL) Dilution Factor: 1
Injection Volume: 0.5(uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 126328 Units: ug/L

CAS NO.	SURROGATE	%REC	Q	LIMITS
118-79-6	2,4,6-Tribromophenol	117		57-120
321-60-8	2-Fluorobiphenyl	89		38-120
367-12-4	2-Fluorophenol	88		51-120
4165-60-0	Nitrobenzene-d5	92		48-120
4165-62-2	Phenol-d5	93		51-120
1718-51-0	Terphenyl-d14	105		50-120

TestAmerica

BNA ANALYSIS QUANTITATION REPORT

Data file : \\DenSvr03\Public\chem\MSS\Y.i\062912a.b\Y8518.D
 Lab Smp Id: 280-30333-B-1-A Client Smp ID: HUNT CISTERN
 Inj Date : 29-JUN-2012 14:54
 Operator : hoffmanm Inst ID: Y.i
 Smp Info : 280-30333-b-1-a
 Misc Info : 280-30333-B-1-A
 Comment : 8270C / 625
 Method : \\DenSvr03\Public\chem\MSS\Y.i\062912a.b\8270C.m
 Meth Date : 02-Jul-2012 10:16 hoffmanm Quant Type: ISTD
 Cal Date : 27-JUN-2012 08:25 Cal File: Y8404.D
 Als bottle: 20
 Dil Factor: 1.00000
 Integrator: HP RTE Compound Sublist: H.sub
 Target Version: 4.14
 Processing Host: DENPC246

Concentration Formula: Amt * DF * Vf/Vs * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vf	1000.000	final volume at end of extraction (uL)
Vs	1056.500	volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG	CONCENTRATIONS					
		RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/ml)	FINAL (ug/L)
*****	=====	=====	=====	=====	=====	=====	=====
* 26 1,4-Dichlorobenzene-d4	152	4.661	4.666 (1.000)		338003	40.0000	
* 58 Naphthalene-d8	136	5.889	5.900 (1.000)		1326245	40.0000	
* 96 Acenaphthene-d10	164	7.616	7.627 (1.000)		810580	40.0000	
* 135 Phenanthrene-d10	188	8.979	8.990 (1.000)		1444260	40.0000	
* 166 Chrysene-d12	240	11.271	11.287 (1.000)		1576604	40.0000	
* 179 Perylene-d12	264	12.587	12.615 (1.000)		1531888	40.0000	
\$ 8 2-Fluorophenol	112	3.462	3.463 (0.743)		1393657	131.486	124.454
\$ 15 Phenol-d5	99	4.285	4.291 (0.919)		1917537	139.955	132.470
\$ 43 Nitrobenzene-d5	82	5.190	5.196 (0.881)		1208843	91.5333	86.6382
\$ 81 2-Fluorobiphenyl	172	6.935	6.947 (0.911)		2301265	88.9955	84.2362
\$ 118 2,4,6-Tribromophenol	330	8.351	8.369 (1.096)		708997	175.777	166.377
\$ 154 Terphenyl-d14	244	10.325	10.349 (0.916)		3356417	105.420	99.7822
\$ 29 1,2-Dichlorobenzene-d4	152	4.814	4.820 (1.033)		696483	84.8855	80.3459
\$ 22 2-Chlorophenol-d4	132	4.455	4.456 (0.956)		1613863	142.593	134.968
4 1,4-Dioxane	88	Compound Not Detected.					
6 Pyridine	79	Compound Not Detected.					
5 N-Nitrosodimethylamine	74	Compound Not Detected.					
18 Aniline	93	Compound Not Detected.					
16 Phenol	94	Compound Not Detected.					
20 Bis(2-chloroethyl) ether	93	Compound Not Detected.					
23 2-Chlorophenol	128	Compound Not Detected.					
25 1,3-Dichlorobenzene	146	Compound Not Detected.					

Compounds	QUANT	SIG					CONCENTRATIONS	
			RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/ml)	FINAL (ug/L)
=====	=====	=====	=====	=====	=====	=====	=====	=====
27 1,4-Dichlorobenzene	146		Compound Not Detected.					
28 Benzyl alcohol	108		4.778	4.779	(1.025)	1677	0.22971	0.217428(aQ)
30 1,2-Dichlorobenzene	146		Compound Not Detected.					
32 2-Methylphenol	108		Compound Not Detected.					
34 2,2'-oxybis(1-chloropropane)	45		Compound Not Detected.					
138 3-Methylphenol	108		Compound Not Detected.					
36 4-Methylphenol	108		Compound Not Detected.					
139 3 & 4-Methylphenol	108		Compound Not Detected.					
37 N-nitrosodi-n-propylamine	70		Compound Not Detected.					
41 Hexachloroethane	117		Compound Not Detected.					
44 Nitrobenzene	77		Compound Not Detected.					
47 Isophorone	82		Compound Not Detected.					
49 2-Nitrophenol	139		Compound Not Detected.					
50 2,4-Dimethylphenol	107		Compound Not Detected.					
52 Bis(2-chloroethoxy)methane	93		Compound Not Detected.					
53 Benzoic acid	122		Compound Not Detected.					
54 2,4-Dichlorophenol	162		Compound Not Detected.					
57 1,2,4-Trichlorobenzene	180		Compound Not Detected.					
59 Naphthalene	128		Compound Not Detected.					
60 4-Chloroaniline	127		Compound Not Detected.					
62 Hexachlorobutadiene	225		Compound Not Detected.					
68 4-Chloro-3-methylphenol	107		Compound Not Detected.					
71 2-Methylnaphthalene	142		Compound Not Detected.					
72 1-Methylnaphthalene	142		Compound Not Detected.					
74 Hexachlorocyclopentadiene	237		Compound Not Detected.					
78 2,4,6-Trichlorophenol	196		Compound Not Detected.					
80 2,4,5-Trichlorophenol	196		Compound Not Detected.					
86 2-Chloronaphthalene	162		Compound Not Detected.					
88 2-Nitroaniline	65		Compound Not Detected.					
91 Dimethyl phthalate	163		Compound Not Detected.					
93 2,6-Dinitrotoluene	165		Compound Not Detected.					
94 Acenaphthylene	152		Compound Not Detected.					
95 3-Nitroaniline	138		Compound Not Detected.					
97 Acenaphthene	153		Compound Not Detected.					
98 2,4-Dinitrophenol	184		Compound Not Detected.					
99 4-Nitrophenol	109		Compound Not Detected.					
101 2,4-Dinitrotoluene	165		Compound Not Detected.					
102 Dibenzofuran	168		Compound Not Detected.					
107 Diethyl phthalate	149		Compound Not Detected.					
109 4-Chlorophenyl phenyl ether	204		Compound Not Detected.					
110 Fluorene	166		Compound Not Detected.					
112 4-Nitroaniline	138		Compound Not Detected.					
113 4,6-Dinitro-2-methylphenol	198		Compound Not Detected.					
115 N-nitrosodiphenylamine	169		Compound Not Detected.					
116 Azobenzene	77		Compound Not Detected.					
234 1,2-DPH(as Azobenzene)	77		Compound Not Detected.					
124 4-Bromophenyl phenyl ether	248		Compound Not Detected.					
125 Hexachlorobenzene	284		Compound Not Detected.					
129 Pentachlorophenol	266		Compound Not Detected.					
136 Phenanthrene	178		Compound Not Detected.					
137 Anthracene	178		Compound Not Detected.					
140 Carbazole	167		Compound Not Detected.					
143 Di-n-butyl phthalate	149		Compound Not Detected.					
149 Fluoranthene	202		Compound Not Detected.					

Compounds	QUANT SIG						CONCENTRATIONS	
		RT	EXP RT	REL RT	RESPONSE		ON-COLUMN (ug/ml)	FINAL (ug/L)
=====	=====	=====	=====	=====	=====		=====	=====
151 Benzidine	184				Compound Not Detected.			
152 Pyrene	202				Compound Not Detected.			
159 Butyl benzyl phthalate	149				Compound Not Detected.			
164 3 3'-Dichlorobenzidine	252				Compound Not Detected.			
165 Benzo(a)anthracene	228				Compound Not Detected.			
167 Chrysene	228				Compound Not Detected.			
162 Bis(2-ethylhexyl) phthalate	149				Compound Not Detected.			
168 Di-n-octyl phthalate	149				Compound Not Detected.			
171 Benzo(b)fluoranthene	252				Compound Not Detected.			
172 Benzo(k)fluoranthene	252				Compound Not Detected.			
178 Benzo(a)pyrene	252				Compound Not Detected.			
186 Indeno(1,2,3-cd)pyrene	276				Compound Not Detected.			
185 Dibenz(a,h)anthracene	278				Compound Not Detected.			
188 Benzo(g,h,i)perylene	276				Compound Not Detected.			
35 1H-Indene	116				Compound Not Detected.			
38 Acetophenone	105				Compound Not Detected.			
19 Methyl Styrene	118				Compound Not Detected.			
141 Alachlor	188				Compound Not Detected.			
127 Atrazine	200				Compound Not Detected.			
67 Caprolactam	55				Compound Not Detected.			
79 2,3-Dichlorobenzeneamine	161				Compound Not Detected.			
158 Famphur	218				Compound Not Detected.			

QC Flag Legend

- a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
- Q - Qualifier signal failed the ratio test.

Data File: Y8518.D

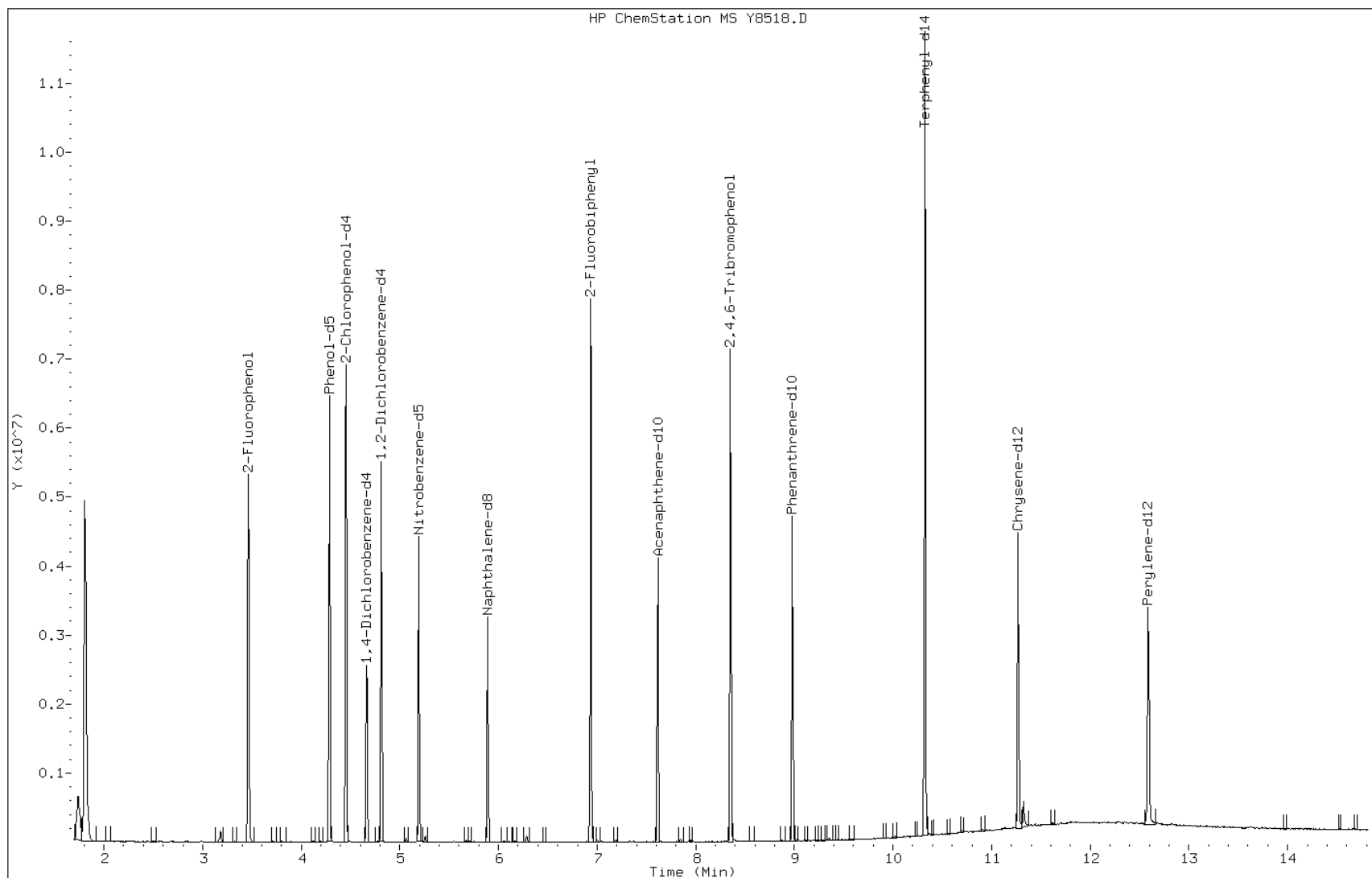
Date: 29-JUN-2012 14:54

Client ID: HUNT CISTERN

Instrument: Y.i

Sample Info: 280-30333-b-1-a

Operator: hoffmanm



Method 8015B – GRO

Gasoline Range Organics (GC) by
Method 8015B

FORM I
GASOLINE RANGE ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1
SDG No.: _____
Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1
Matrix: Water Lab File ID: 209F2001.D
Analysis Method: 8015B Date Collected: 06/21/2012 11:15
Sample wt/vol: 5(mL) Date Analyzed: 06/22/2012 23:39
Soil Aliquot Vol: _____ Dilution Factor: 1
Soil Extract Vol.: _____ GC Column: RTX 502.2 (105) ID: 0.53(mm)
% Moisture: _____ Level: (low/med) Low
Analysis Batch No.: 125437 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
8006-61-9	Gasoline Range Organics (GRO)-C6-C10	ND		25	10

CAS NO.	SURROGATE	%REC	Q	LIMITS
98-08-8	a,a,a-Trifluorotoluene	90		82-110

TestAmerica

Method 8015 GRO

Data file : \\DenSvr03\Public\chem\GCV\GC_B.i\0622121.B\209F2001.D
Lab Smp Id: 280-30333-K-1 Client Smp ID: HUNT CISTERN
Inj Date : 22-JUN-2012 23:39
Operator : AMB Inst ID: GC_B.i
Smp Info : 280-30333-K-1
Misc Info : 280-30333-K-1
Comment : 8015 GRO
Method : \\DenSvr03\Public\chem\GCV\GC_B.i\0622121.B\8015.m
Meth Date : 22-Jun-2012 12:05 target Quant Type: ESTD
Cal Date : 14-MAR-2012 13:49 Cal File: 206F0801.D
Als bottle: 209
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: GRO.A.01.sub
Target Version: 4.14
Processing Host: DENPC382

Concentration Formula: Amt * DF * Vod/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vod	5.000	Total Volume purged
Vo	5.000	Sample Volume purged (mL)
Cpnd Variable		Local Compound Variable

Compounds					CONCENTRATIONS	
	RT	EXP RT	DLT RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
=====	====	=====	=====	=====	=====	=====
\$ 1 Trifluorotoluene	7.866	7.850	0.016	268835	27.0887	27.0887
S 2 GRO - C6 to C10	4.413-13.837			26353	8.12639	8.12639(a)
4 1-Chloro-4-Fluorobenzene	11.273	11.260	0.013	258213	27.1820	27.1820
\$ 5 Chlorobenzene	11.486	11.473	0.013	318558	27.7345	27.7345

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: 209F2001.D

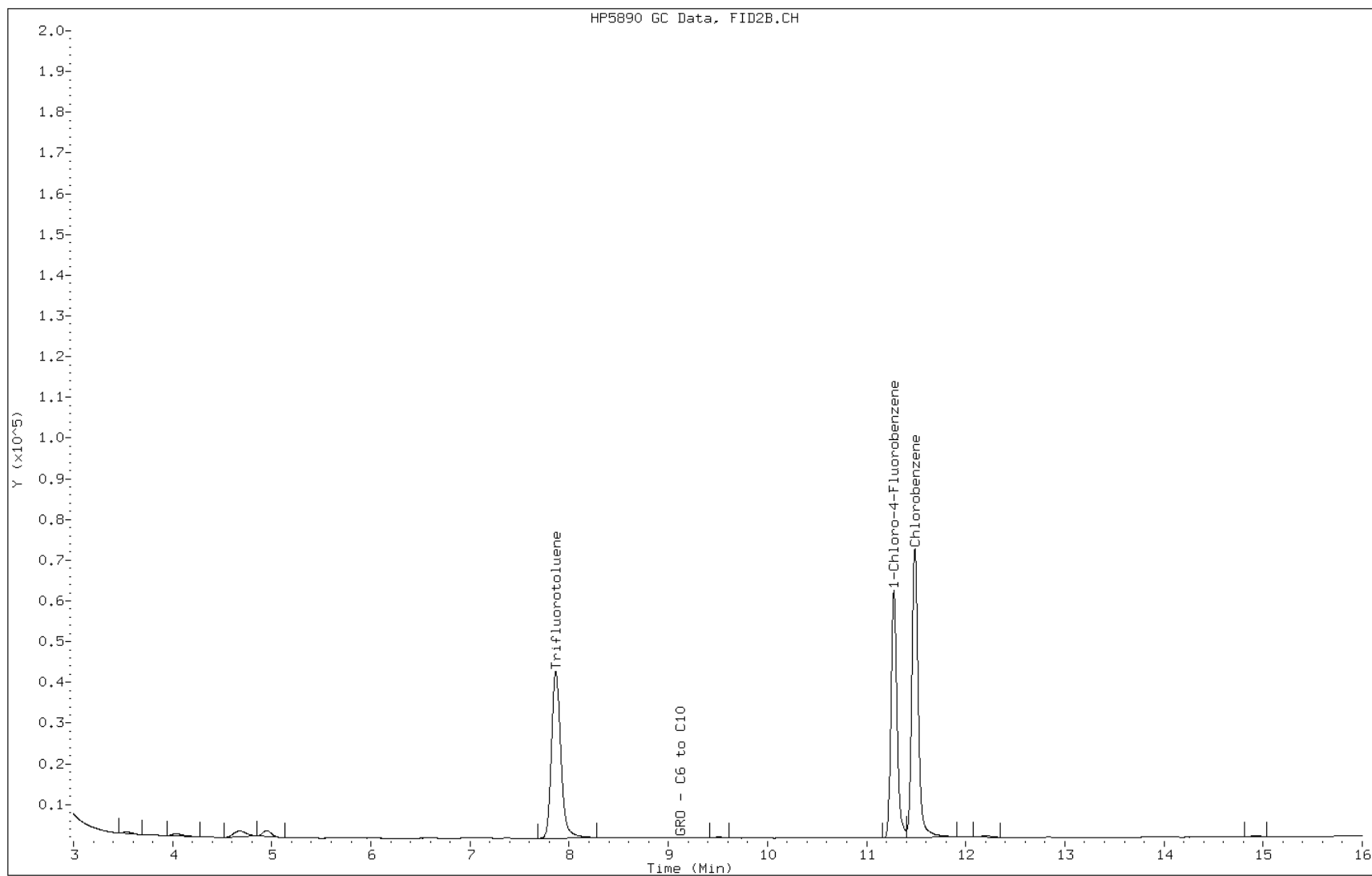
Date: 22-JUN-2012 23:39

Client ID: HUNT CISTERN

Instrument: GC_B.i

Sample Info: 280-30333-K-1

Operator: AMB



Method RSK-175

Dissolved Gases (GC) by Method
RSK_175

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Houston Job No.: 280-30333-1
SDG No.: _____
Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1
Matrix: Water Lab File ID: rsk070212_008.d
Analysis Method: RSK-175 Date Collected: 06/21/2012 11:15
Sample wt/vol: 1(mL) Date Analyzed: 07/02/2012 16:13
Soil Aliquot Vol: _____ Dilution Factor: 1
Soil Extract Vol.: _____ GC Column: RTX-5 ID: 0.53(mm)
% Moisture: _____ Level: (low/med) Low
Analysis Batch No.: 83033 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-84-0	Ethane	ND		2.0	0.30
74-82-8	Methane	11		1.0	0.36
74-98-6	Propane	ND		2.0	0.75

TestAmerica Houston

Data file : \\housvr4\chem\FID14.i\070212.b\rsk070212_008.d
Lab Smp Id: 280-30333-P-1 Client Smp ID: HUNT CISTERN
Inj Date : 02-JUL-2012 16:13
Operator : lamj Inst ID: FID14.i
Smp Info : 280-30333-P-1
Misc Info : 280-30333-P-1
Comment :
Method : \\housvr4\chem\FID14.i\070212.b\RSK175.m
Meth Date : 14-Jun-2012 17:10 Quant Type: ESTD
Cal Date : 28-MAR-2012 15:34 Cal File: rsk032812_006.d
Als bottle: 1
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: all.sub
Target Version: 4.14
Processing Host: HOUSVR3

Concentration Formula: Amt * DF * Vt/Va * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vt	10.000	Final Volume
Va	10.000	Aliquot Volume
Cpnd Variable		Local Compound Variable

Compounds						CONCENTRATIONS	
	RT	EXP RT	DLT RT	RESPONSE		ON-COLUMN (ug/L)	FINAL (mg/L)
1 Methane	0.900	0.914	-0.014	76946		10.6105	10.61(M)
2 Ethane	1.133	1.097	0.036	1695		0.23783	0.238(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: rsk070212_008.d

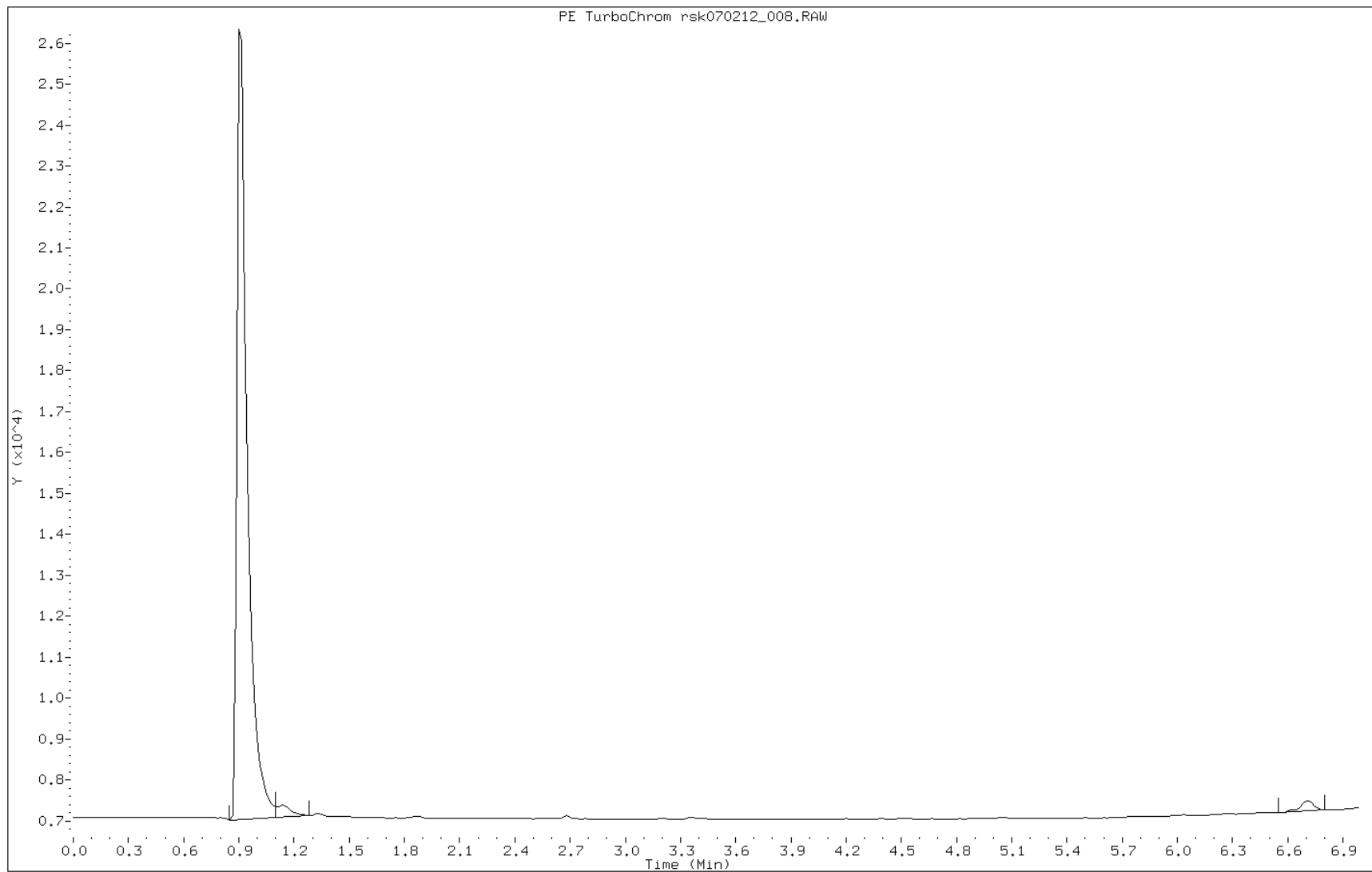
Date: 02-JUL-2012 16:13

Client ID: HUNT CISTERN

Instrument: FID14.i

Sample Info: 280-30333-P-1

Operator: lamj



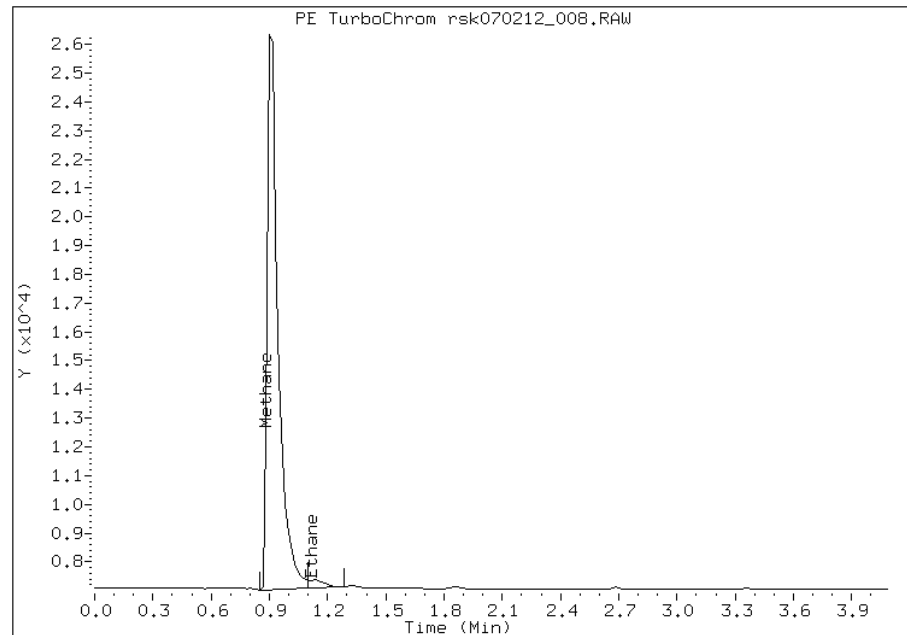
Manual Integration Report

Data File: rsk070212_008.d
Inj. Date and Time: 02-JUL-2012 16:13
Instrument ID: FID14.i
Client ID: HUNT CISTERN
Compound: 2 Ethane
CAS #: 74-84-0
Report Date: 07/03/2012

Processing Integration Results

Not Detected

Expected RT: 1.10



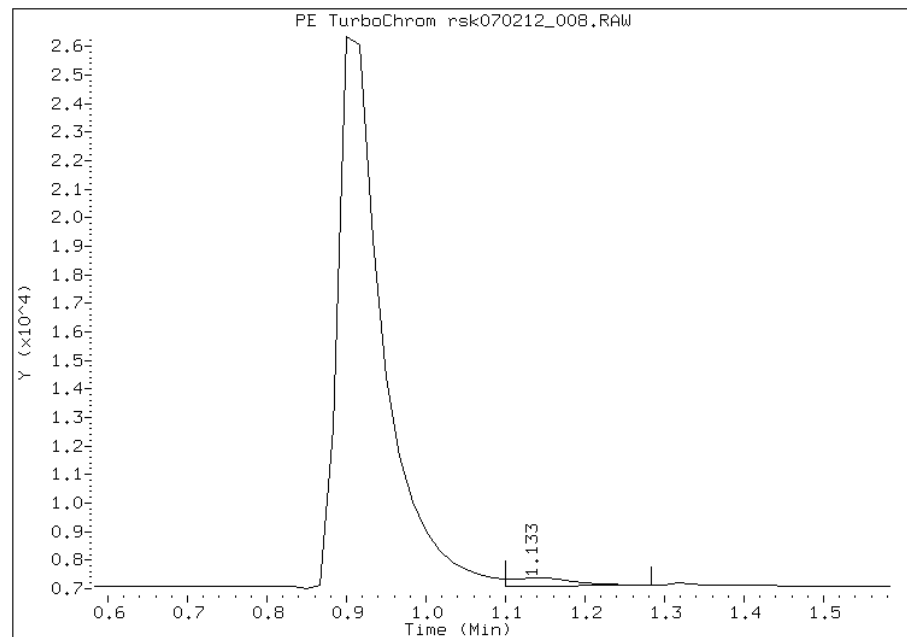
Manual Integration Results

RT: 1.13

Response: 1695

Amount: 0.24

Conc: 0.24



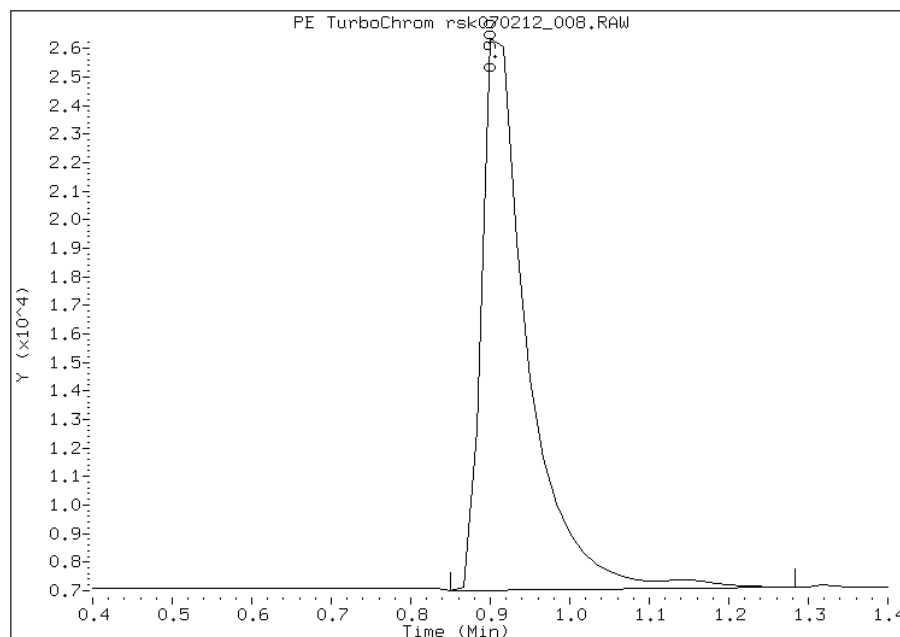
Manually Integrated By: lamj
Modification Date:
Manual Integration Reason: Peak Integrated Incorrectly

Manual Integration Report

Data File: rsk070212_008.d
Inj. Date and Time: 02-JUL-2012 16:13
Instrument ID: FID14.i
Client ID: HUNT CISTERN
Compound: 1 Methane
CAS #: 74-82-8
Report Date: 07/03/2012

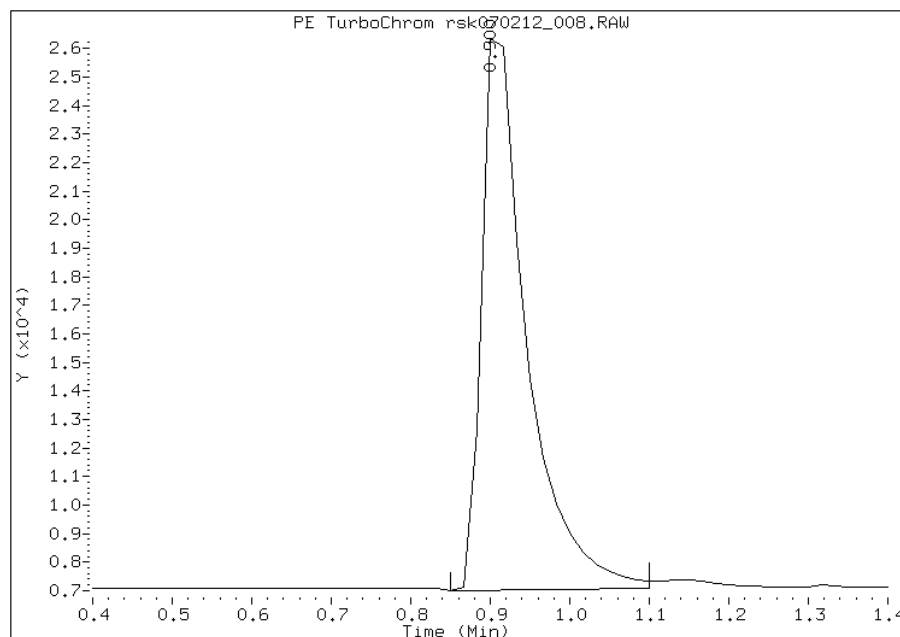
Processing Integration Results

RT: 0.90
Response: 78386
Amount: 10.84
Conc: 10.84



Manual Integration Results

RT: 0.90
Response: 76946
Amount: 10.61
Conc: 10.61



Manually Integrated By: lamj
Modification Date: 03-Jul-2012 15:57
Manual Integration Reason: Peak Integrated Incorrectly

Method 8015B – DRO

Diesel Range Organics (DRO) (GC) by
Method 8015B

FORM I
DIESEL RANGE ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-30333-1
SDG No.: _____
Client Sample ID: HUNT CISTERN Lab Sample ID: 280-30333-1
Matrix: Water Lab File ID: 014F1401.D
Analysis Method: 8015B Date Collected: 06/21/2012 11:15
Extraction Method: 3510C Date Extracted: 06/22/2012 16:58
Sample wt/vol: 1061.44 (mL) Date Analyzed: 06/27/2012 18:40
Con. Extract Vol.: 1000 (uL) Dilution Factor: 1
Injection Volume: 1 (uL) GC Column: RTX-1 (30.32) ID: 0.25 (mm)
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 125910 Units: mg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00255	C10-C36	0.066	J	0.47	0.053

CAS NO.	SURROGATE	%REC	Q	LIMITS
84-15-1	o-Terphenyl	71		50-115
630-02-4	n-Octacosane	90		26-152

Data File: \\DenSvr03\Public\chem\GCS\GC_U2.i\0627121.B\014F1401.D
 Report Date: 28-Jun-2012 08:35

TestAmerica

SW846 8015 mod.

Data file : \\DenSvr03\Public\chem\GCS\GC_U2.i\0627121.B\014F1401.D
 Lab Smp Id: 280-30333-C-1-A Client Smp ID: HUNT CISTERN
 Inj Date : 27-JUN-2012 18:40
 Operator : MB Inst ID: GC_U2.i
 Smp Info : 280-1483716,33-1
 Misc Info : 280-30333-C-1-A
 Comment : DEN-GC-0002
 Method : \\DenSvr03\Public\chem\GCS\GC_U2.i\0627121.B\DR01.m
 Meth Date : 28-Jun-2012 08:29 target Quant Type: ESTD
 Cal Date : 26-APR-2012 17:36 Cal File: 010F1001.D
 Als bottle: 14
 Dil Factor: 1.00000
 Integrator: Falcon Compound Sublist: C10-C36sub.sub
 Target Version: 4.14
 Processing Host: DENPC064

Concentration Formula: Amt * DF * Vf / Vs * * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vf	1000.000	Final Extract Volume (uL)
Vs	1061.440	Volume of Sample Extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ug/ml)	FINAL (ug/L)
\$ 1 o-Terphenyl	8.174	8.180	-0.006	32965	14.1720	13.35(M)
S 9 C10-C36	3.390-13.340			106405	69.5928	65.56(M)
S 8 C10-C28	3.390-11.360			48559	31.7815	29.94(M)
\$ 11 n-Octacosane	11.344	11.349	-0.005	30772	18.0445	17.00(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: 014F1401.D

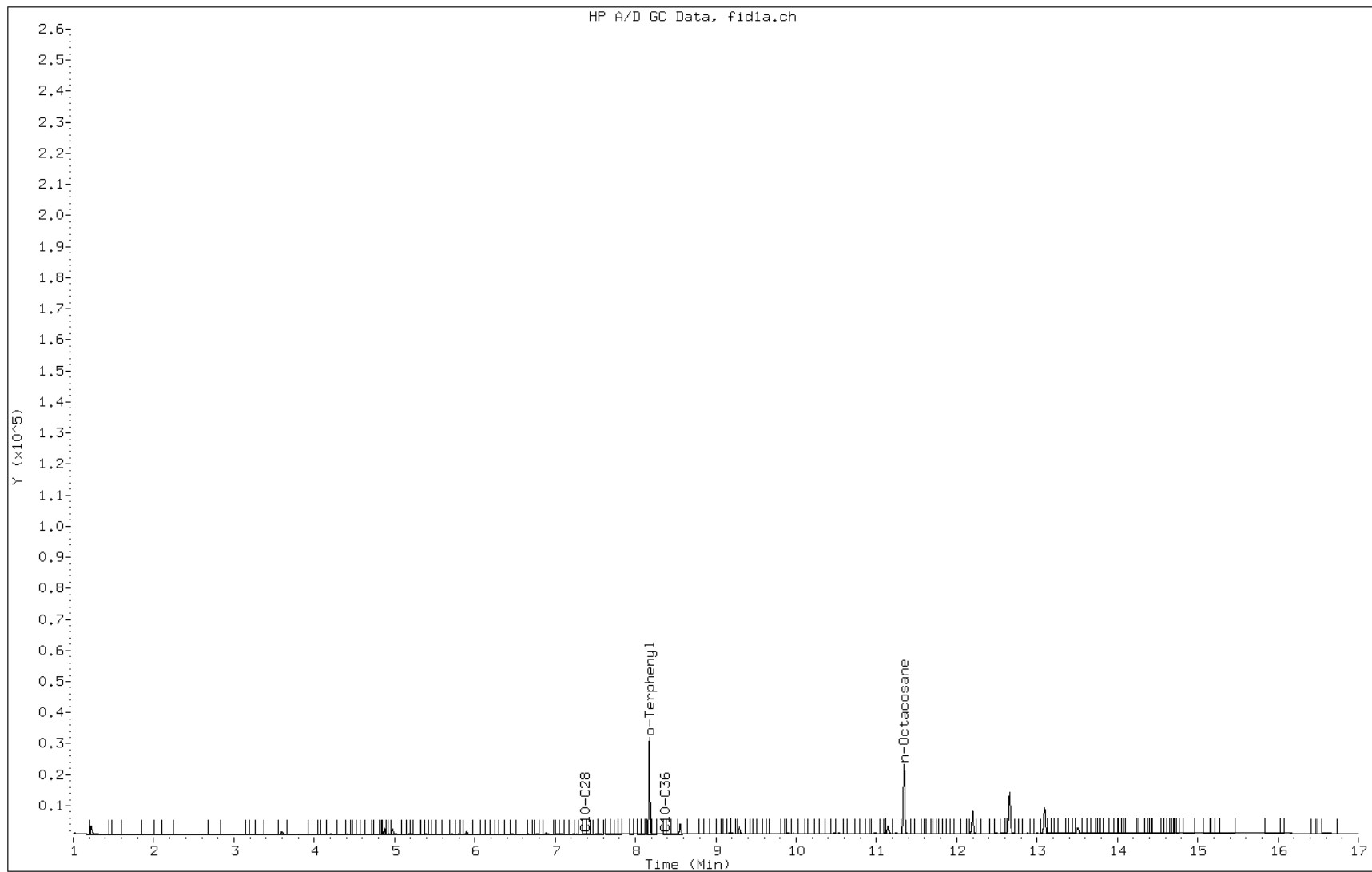
Date: 27-JUN-2012 18:40

Client ID: HUNT CISTERN

Instrument: GC_U2.i

Sample Info: 280-1483716,33-1

Operator: MB

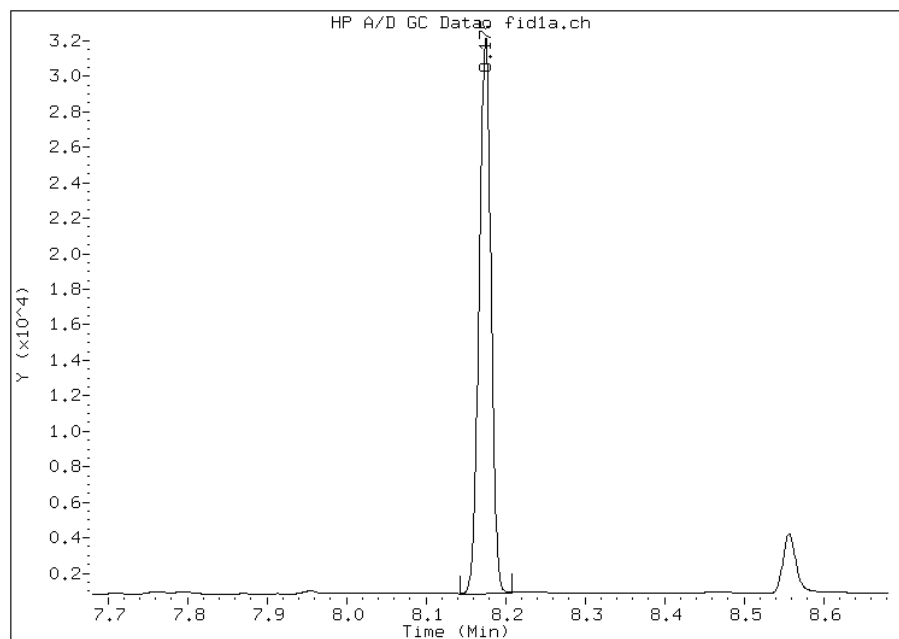


Manual Integration Report

Data File: 014F1401.D
Inj. Date and Time: 27-JUN-2012 18:40
Instrument ID: GC_U2.i
Client ID: HUNT CISTERN
Compound: 1 o-Terphenyl
CAS #: 84-15-1
Report Date: 06/28/2012

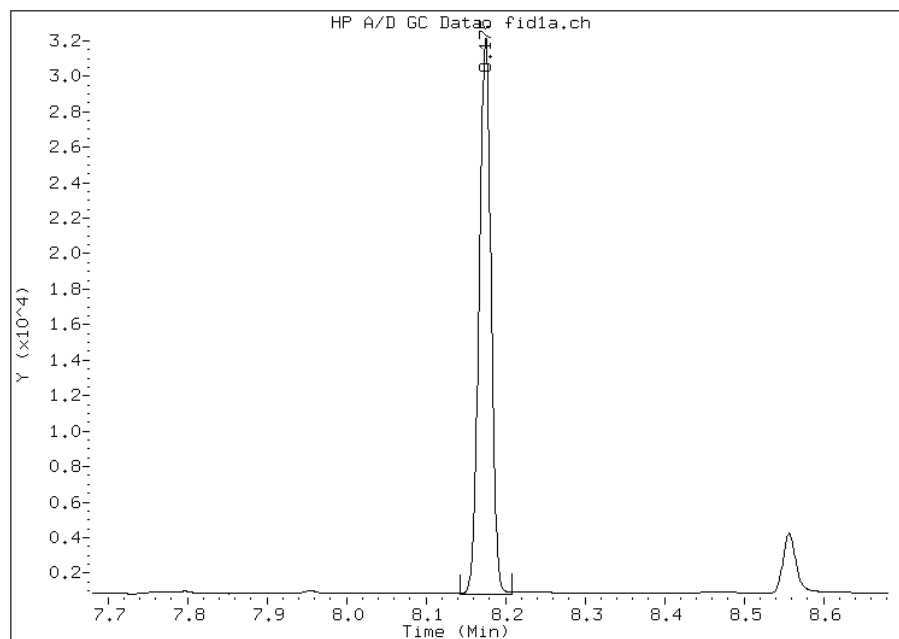
Processing Integration Results

RT: 8.17
Response: 32765
Amount: 14.09
Conc: 13.27



Manual Integration Results

RT: 8.17
Response: 32965
Amount: 14.17
Conc: 13.35



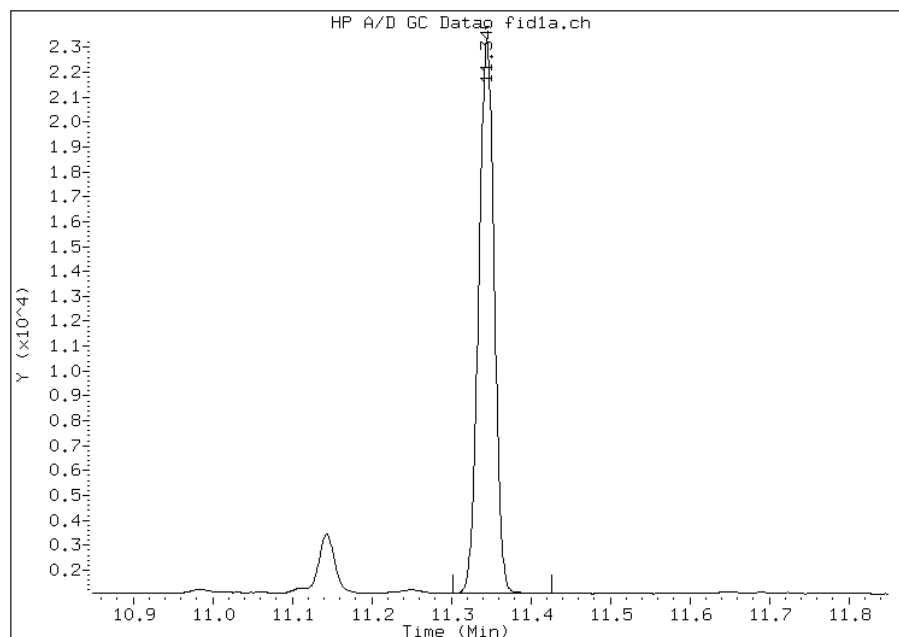
Manually Integrated By: pavlakoa
Modification Date: 28-Jun-2012 08:34
Manual Integration Reason: Baseline Event

Manual Integration Report

Data File: 014F1401.D
Inj. Date and Time: 27-JUN-2012 18:40
Instrument ID: GC_U2.i
Client ID: HUNT CISTERN
Compound: 11 n-Octacosane
CAS #: 630-02-4
Report Date: 06/28/2012

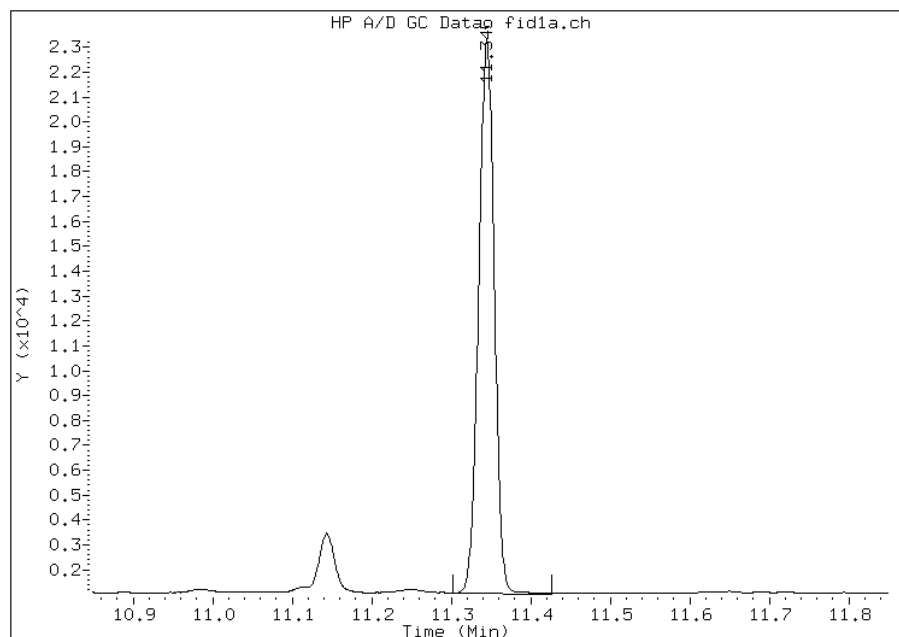
Processing Integration Results

RT: 11.34
Response: 30619
Amount: 17.95
Conc: 16.92



Manual Integration Results

RT: 11.34
Response: 30772
Amount: 18.04
Conc: 17.00



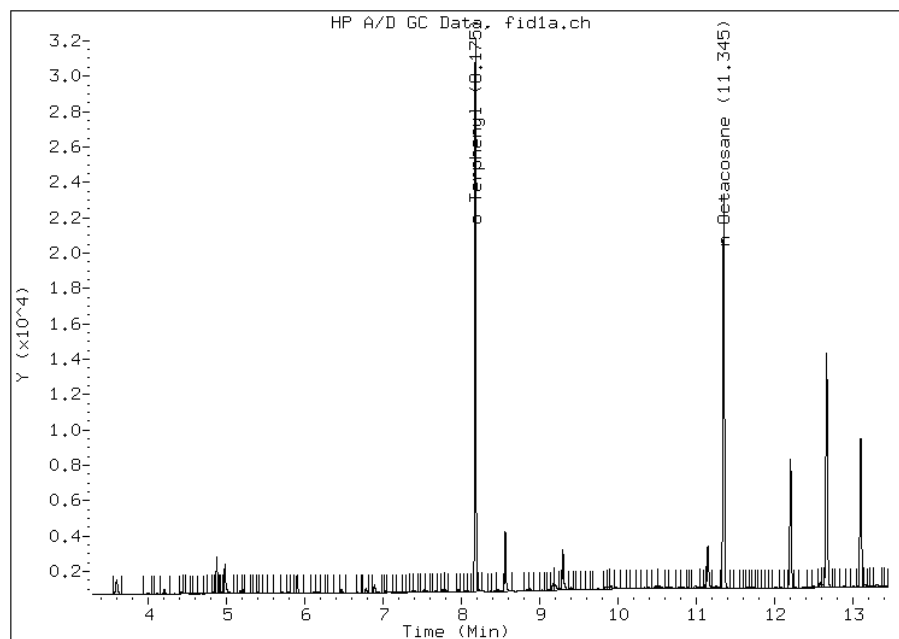
Manually Integrated By: pavlakoa
Modification Date: 28-Jun-2012 08:35
Manual Integration Reason: Baseline Event

Manual Integration Report

Data File: 014F1401.D
Inj. Date and Time: 27-JUN-2012 18:40
Instrument ID: GC_U2.i
Client ID: HUNT CISTERN
Compound: 9 C10-C36
CAS #: STL00255
Report Date: 06/28/2012

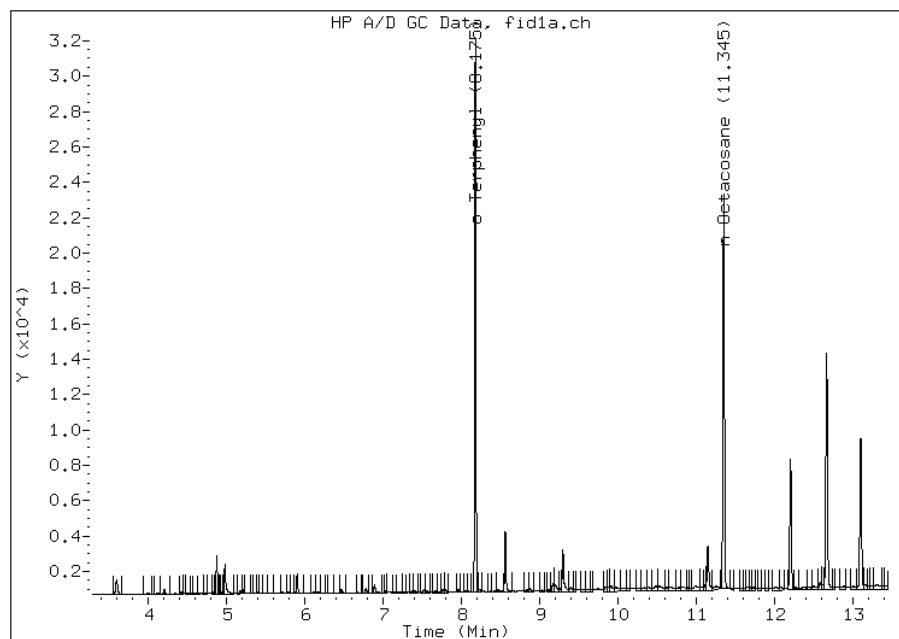
Processing Integration Results

RT: 8.37
Response: 74047
Amount: 48.43
Conc: 45.63



Manual Integration Results

RT: 8.37
Response: 106405
Amount: 69.59
Conc: 65.56



Manually Integrated By: pavlakoa
Modification Date: 28-Jun-2012 08:35
Manual Integration Reason: Baseline Event

Subcontract Data

Shipping and Receiving Documents

Sampler ID Herdebank
 Temperature on Receipt 5.7/12/16
 Drinking Water? Yes ☐ No ☐ 6/12/16
TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING


Client	Co6cc	Project/Manager	Linda Spry ORourke	Date	June 21, 12	Chain of Custody Number	161154
Address	707 Wagoni	Telephone Number (Area Code)/Fax Number	(970) 625-2497	Lab Number		Page	1 of 1

City	State	Zip Code	Site Contact	Lab Contact	Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Deposit
Project Name and Location (State)	Carrier/Waybill Number	Contract/Purchase Order/Quote No.				
Chicago, IL	IL	60650	Herdenbenk		1. 100 g 2. 100 g 3. 100 g 4. 100 g 5. 100 g 6. 100 g 7. 100 g 8. 100 g 9. 100 g 10. 100 g 11. 100 g 12. 100 g 13. 100 g 14. 100 g 15. 100 g 16. 100 g 17. 100 g 18. 100 g 19. 100 g 20. 100 g 21. 100 g 22. 100 g 23. 100 g 24. 100 g 25. 100 g 26. 100 g 27. 100 g 28. 100 g 29. 100 g 30. 100 g 31. 100 g 32. 100 g 33. 100 g 34. 100 g 35. 100 g 36. 100 g 37. 100 g 38. 100 g 39. 100 g 40. 100 g 41. 100 g 42. 100 g 43. 100 g 44. 100 g 45. 100 g 46. 100 g 47. 100 g 48. 100 g 49. 100 g 50. 100 g 51. 100 g 52. 100 g 53. 100 g 54. 100 g 55. 100 g 56. 100 g 57. 100 g 58. 100 g 59. 100 g 60. 100 g 61. 100 g 62. 100 g 63. 100 g 64. 100 g 65. 100 g 66. 100 g 67. 100 g 68. 100 g 69. 100 g 70. 100 g 71. 100 g 72. 100 g 73. 100 g 74. 100 g 75. 100 g 76. 100 g 77. 100 g 78. 100 g 79. 100 g 80. 100 g 81. 100 g 82. 100 g 83. 100 g 84. 100 g 85. 100 g 86. 100 g 87. 100 g 88. 100 g 89. 100 g 90. 100 g 91. 100 g 92. 100 g 93. 100 g 94. 100 g 95. 100 g 96. 100 g 97. 100 g 98. 100 g 99. 100 g 100. 100 g	1. 100 g 2. 100 g 3. 100 g 4. 100 g 5. 100 g 6. 100 g 7. 100 g 8. 100 g 9. 100 g 10. 100 g 11. 100 g 12. 100 g 13. 100 g 14. 100 g 15. 100 g 16. 100 g 17. 100 g 18. 100 g 19. 100 g 20. 100 g 21. 100 g 22. 100 g 23. 100 g 24. 100 g 25. 100 g 26. 100 g 27. 100 g 28. 100 g 29. 100 g 30. 100 g 31. 100 g 32. 100 g 33. 100 g 34. 100 g 35. 100 g 36. 100 g 37. 100 g 38. 100 g 39. 100 g 40. 100 g 41. 100 g 42. 100 g 43. 100 g 44. 100 g 45. 100 g 46. 100 g 47. 100 g 48. 100 g 49. 100 g 50. 100 g 51. 100 g 52. 100 g 53. 100 g 54. 100 g 55. 100 g 56. 100 g 57. 100 g 58. 100 g 59. 100 g 60. 100 g 61. 100 g 62. 100 g 63. 100 g 64. 100 g 65. 100 g 66. 100 g 67. 100 g 68. 100 g 69. 100 g 70. 100 g 71. 100 g 72. 100 g 73. 100 g 74. 100 g 75. 100 g 76. 100 g 77. 100 g 78. 100 g 79. 100 g 80. 100 g 81. 100 g 82. 100 g 83. 100 g 84. 100 g 85. 100 g 86. 100 g 87. 100 g 88. 100 g 89. 100 g 90. 100 g 91. 100 g 92. 100 g 93. 100 g 94. 100 g 95. 100 g 96. 100 g 97. 100 g 98. 100 g 99. 100 g 100. 100 g

Special Instructions/
Conditions of Receipt[illegible]

Possible Hazard Identification	<input type="checkbox"/> Non-Hazard	<input type="checkbox"/> Flammable	<input checked="" type="checkbox"/> Skin Irritant	<input type="checkbox"/> Poison B	<input type="checkbox"/> Unknown	Sample Disposal	<input type="checkbox"/> Return To Client	<input type="checkbox"/> Disposal By Lab	<input type="checkbox"/> Archive For _____ Months	(A fee may be assessed if samples are retained longer than 1 month)
--------------------------------	-------------------------------------	------------------------------------	---	-----------------------------------	----------------------------------	-----------------	---	--	---	---

QC Requirements (Specify)

Turn Around Time Required				QC Requirements (Specify)			
<input type="checkbox"/> 24 Hours	<input type="checkbox"/> 48 Hours	<input type="checkbox"/> 7 Days	<input type="checkbox"/> 14 Days	<input type="checkbox"/> 21 Days	Other	Date	Time
1. Relinquished By				1. Received By 			
				Date <u>6/22/12</u> Time <u>0930</u>			
2. Relinquished By				2. Received By			
				Date Date Time			
3. Relinquished By				3. Received By			
				Date Date Time			

Comments:

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

From: Spry ORourke, Linda [<mailto:Linda.SpryORourke@state.co.us>]
Sent: Monday, June 18, 2012 1:49 PM
To: Egry, Joseph J.
Cc: Fischer, Alex
Subject: RE: Bottle Order

Joe,

I mis-spoke in the email below; we need to receive the bottles in Rifle on Wednesday 6/20/2012.

Linda Spry O'Rourke
Environmental Protection Specialist, Northwest Region
Colorado Oil & Gas Conservation Commission
707 Wapiti Court
Suite 204
Rifle, CO 81650

(970) 625-2497 Office
(970) 625-5682 Fax
(970) 309-3356 Cellular
linda.spryorourke@state.co.us

From: Spry ORourke, Linda
Sent: Monday, June 18, 2012 1:41 PM
To: 'Egry, Joseph J.'
Cc: Fischer, Alex
Subject: Bottle Order

Hi.

Please ship sample containers for the following tests to the Rifle COGCC office and let me know when they can be shipped and arrive. If possible, I'd like to receive these by the end of this week. We anticipate collecting 3 samples late this week or early next. There may be a delay before the other 3 samples are collected. Thanks.

Test	Test Method	Number Water Samples
SPECIFIC CONDUCTIVITY	EPA120.1	6
PH	EPA150.1	6
TOTAL DISSOLVED SOLIDS	EPA160.1	6
Dissolved METALS - ICP	EPA200.7	6
Dissolved Metals	EPA200.8	6
Mercury	E245.1	6
Inorganic anions (Br,Cl,Fl,N02 asN,NO3asN,SO4)	EPA300.0	6
Alkalinity (bicarb as CaCO3, total alk as CaCO3, carbonate as CaCO3)	EPA310.1	6
dissolved gases (methane, ethane, propane)	RSK175	6
GASOLINE RANGE ORGANICS	SW8015	6
DIESEL RANGE ORGANICS	SW8015	6
Semi-VOCs/PAH	SW8270	6

VOCs	SW8260	6
SODIUM ADSORPTION RATIO	Lab calculated	6
Total Organic Carbon	Method 413.1	6

Linda Spry O'Rourke
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No virus found in this incoming message.

Checked by AVG - www.avg.com

Version: 9.0.930 / Virus Database: 2433.1.1/5079 - Release Date: 06/19/12 00:49:00

Login Sample Receipt Checklist

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Login Number: 30333

List Source: TestAmerica Denver

List Number: 1

Creator: Lazarte, Noah M

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	No time on COC, logged in per container labels.
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-30333-1

Login Number: 30333

List Number: 1

Creator: Trenery, Michael J

List Source: TestAmerica Houston

List Creation: 06/23/12 10:26 AM

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

Attachment 4



Northern Plains & Mountains

Regional Water Program

Applying knowledge to improve water quality

A Partnership of USDA NIFA & Land Grant Colleges & Universities

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Water Quality Interpretation Tool

*Hunt Cistern 6/21/2012 sample
Job 280-30333-1
NOAV 200355205*

[Evaluation](#) [Resources](#) [Contact Us](#)

Interpretations of Drinking Water Quality for Colorado

Test Name	Lab Result	Interpretation	Excellent	Satisfactory	Additional Comments
1) Routine Water Analysis					
Alkalinity as CaCO ₃	640 mg/L	Objectionable		<= 400 mg/L***	This water is considered objectionable because it exceeds the recommended guideline of 400 mg/L. Since calcium is a major component of water hardness, water softeners are the main method of treatment. Chemical softening, reverse osmosis, electrodialysis, and ion exchange are also applicable treatments. For more information on drinking water please visit: <ul style="list-style-type: none"> CSU Extension: Drinking Water Quality and Health Well Educated Fact Sheet - Alkalinity, pH and Total Dissolved Solids
Bicarbonate	640 mg/L	No standard			At this time, there is no drinking water quality guideline for bicarbonate because no documented threshold of injury has been shown to occur. For general information on drinking water quality, please visit: <ul style="list-style-type: none"> CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Boron (B)	0.480 mg/L	No standard			At this time, there is no USEPA drinking water quality standard for boron because no documented threshold of injury has been shown to occur. Low dietary levels of boron may protect against fluorosis and bone demineralization and may indirectly influence calcium, phosphorus, and magnesium metabolism. In high doses boron can be toxic. For more information on boron in drinking water please visit: <ul style="list-style-type: none"> Water Quality Criteria for Boron
Calcium (Ca)	110 mg/L	No standard			At this time, there is no drinking water quality guideline for calcium because no documented threshold of injury has been shown to occur. Treatment can be accomplished with a cation exchange water softener. For general information on drinking water quality, please visit: <ul style="list-style-type: none"> CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Carbonate (CO ₃)	1.1 mg/L	No standard			At this time, there is no drinking water quality guideline for carbonate because no documented threshold of injury has been shown to occur. For general information on drinking water quality, please visit: <ul style="list-style-type: none"> CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Chloride (Cl)	440 mg/L	Objectionable	< 20 mg/L**	20 - 250 mg/L**	This water is considered objectionable because it exceeds the secondary standard of 250 mg/L. Chloride tends to affect the taste of water and can cause corrosion in water distribution systems. Demineralization processes such as reverse osmosis or electro dialysis can be used to remove chloride from drinking water. For more information on

					chloride in drinking water please visit: <ul style="list-style-type: none"> BC Ministry of Environment: Ambient Water Quality Guidelines for Chloride EPA Drinking Water Criteria
Electrical Conductivity (EC)	6800 umhos/cm	No standard			At this time, there is no drinking water quality guideline for electrical conductivity because no documented threshold of injury has been shown to occur. For general information on drinking water quality, please visit: <ul style="list-style-type: none"> CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Magnesium (Mg)	100 mg/L	No standard			At this time, there is no drinking water quality guideline for magnesium because no documented threshold of injury has been shown to occur. Treatment can be accomplished with a cation exchange water softener. For general information on drinking water quality please visit: <ul style="list-style-type: none"> CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
NO ₃ -N + NO ₂ -N (Total)	1.55 mg/L	Satisfactory	< 1 mg/L*	1 - 10 mg/L*	This water is considered satisfactory because it is less than the primary standard of 10.0 mg/L. Testing labs generally analyze for nitrate and nitrite together so the results are often expressed as nitrate+nitrite as N. The drinking water standard for nitrite-N is 1.0 mg/L. However, nitrite is very uncommon in groundwater, so it is generally assumed that almost all of the nitrate plus nitrite is in the nitrate form. Natural levels of nitrate-N vary from zero to about 4 mg/L. If the value is above 4 mg/L it is possible that nitrate-N is moving into groundwater from a surface landuse or a septic system. Nitrate-N values exceeding 8 mg/L are approaching the health standard and should be monitored regularly especially if an infant under 1 year of age is using the water. Nitrate-N values over 10 mg/L are unsatisfactory and action should be taken to determine the source and discontinue use of the water for infants or people with cardiac problems. <ul style="list-style-type: none"> EPA Factsheet on NITRATE/NITRITE Well Educated Fact Sheet - Nitrate & Nitrite
Nitrate as Nitrogen (NO ₃ -N)	1.3 mg/L	Satisfactory	< 1 mg/L*	1 - 10 mg/L*	This water is considered satisfactory because it is less than the primary standard of 10.0 mg/L as nitrate-nitrogen (NO ₃ -N). In drinking water, high nitrate concentrations can have serious effects on the health of infants. These consequences occur when nitrate is converted to nitrite and then combines with hemoglobin in the blood to form methemoglobin. Since methemoglobin does not absorb oxygen, the reduced capacity of the blood to absorb oxygen can be fatal. Nitrate problems in drinking water are usually seen when groundwater is the water source. Nitrate is best removed by reverse osmosis. Biological denitrification and anion exchange are also potential methods of removal. Elimination of the nitrogen source is often the best solution. For more information on nitrate in drinking water please visit: <ul style="list-style-type: none"> EPA Factsheet on NITRATE/NITRITE Well Educated Fact Sheet - Nitrate & Nitrite
Nitrite as Nitrogen (NO ₂ -N)	0.25 mg/L	Excellent	< 1 mg/L*	1 - 1 mg/L*	This water is considered excellent because it is less than the primary excellence standard of 1.0 mg/L. Like nitrate, nitrite may also harm the oxygen-carrying capacity of the blood by reducing hemoglobin to methemoglobin. Its presence is an indicator of high concentrations of either nitrate or ammonia. Treatment can be accomplished with chemical oxidation, anion exchange, reverse osmosis, or distillation. For more information on nitrite in drinking water, please visit: <ul style="list-style-type: none"> EPA Factsheet on NITRATE/NITRITE Well Educated Fact Sheet - Nitrate & Nitrite
					This water is considered excellent because it falls between

pH	7.47 pH	Excellent	7.0 - 7.5	6.5 - 8.5***	7 and 7.5. Water outside the range of 6.5 to 8.5 can be corrosive to water systems. pH can be increased by adding soda ash. pH can be decreased by adding white vinegar or citric acid. Neutralizing filters can also be used (calcite or calcite/magnesium media). For more information on pH of drinking water please visit: <ul style="list-style-type: none"> Wellcare - pH in Drinking Water Well Educated Fact Sheet - Alkalinity, pH and Total Dissolved Solids
Potassium (K)	5.1 mg/L	No standard			At this time, there is no drinking water quality guideline for potassium because no documented threshold of injury has been shown to occur. Treatment can be accomplished with distillation or reverse osmosis. For general information on drinking water quality, please visit: <ul style="list-style-type: none"> CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Sodium (Na)	1200 mg/L	No standard			At this time, there is no drinking water quality standard for sodium. However, sodium can contribute to hypertension and intake in drinking water should be considered by people on low sodium diets in association with reducing risk of cardiovascular disease. Sodium in drinking water supplies can range from 0.4 to 1,900 mg/L and is a commonly found in groundwater which can impart a salty taste at concentrations over 250 mg/L. Ion exchange and demineralization process can be used for sodium removal. Consumers in areas with hard water that install water softener devices, increase the concentration of sodium in their water. For additional information on sodium in drinking water quality, please visit: <ul style="list-style-type: none"> EPA: Sodium in Drinking Water
Sulfate (SO ₄)	2700 mg/L	Objectionable	< 20 mg/L**	20 - 250 mg/L**	This water is considered objectionable because it exceeds the secondary standard of 250 mg/L. Sulfate intake of 1000 to 2000 mg can cause diarrhea in humans. This is particularly true when a person switches from drinking water with a small concentration of sulfate to water with a high sulfate concentration. Treatment can be accomplished with anion exchange, reverse osmosis, or distillation. For more information on sulfate in drinking water please visit: <ul style="list-style-type: none"> CSU Extension: Drinking Water Quality and Health
Total Dissolved Solids (TDS)	4900 mg/L	Objectionable	< 200 mg/L**	200 - 500 mg/L**	This water is considered objectionable because it exceeds the secondary standard of 500 mg/L. High dissolved solids can leave deposits on glasses and fixtures. Treatment can be accomplished with reverse osmosis, distillation, and deionization by ion exchange. For more information on TDS in drinking water please visit: <ul style="list-style-type: none"> Wellcare - TDS in Drinking Water EPA Drinking Water Criteria Well Educated Fact Sheet - Alkalinity, pH and Total Dissolved Solids

Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
3) Individual Metals Analysis				
Aluminum (Al)	0.018 mg/L	Acceptable	<= 0.05 mg/L**	This water is considered satisfactory because it is less than the secondary standard of 0.05 mg/L. For healthy people, the gastrointestinal tract and skin are usually effective barriers against the absorption of aluminum. High tissue levels of aluminum in people may be associated with the development of brain and central nervous system disorders. Ion exchange and demineralization are potential methods for removal of aluminum from water. For more information on drinking water quality please visit: <ul style="list-style-type: none"> EPA Drinking Water Criteria
				This water is considered satisfactory because it is less than the primary standard of 2.0 mg/L. Acute exposure to barium results in gastrointestinal, neuromuscular, and cardiac effects to animals and

Barium (Ba)	0.021 mg/L	Acceptable	≤ 2 mg/L*	<p>humans. Barium does not accumulate in bones, muscles, kidneys, or other tissues. Lime softening (pH = 10 to 11) or an ion exchange softener may reduce barium by 95%. Reverse osmosis is also listed among the USEPA's best available technology. For more information on barium in drinking water please visit:</p> <ul style="list-style-type: none"> ▪ EPA Factsheet on BARIUM ▪ Well Educated Fact Sheet - Antimony, Barium and Beryllium
Cadmium (Cd)	0.000040 mg/L	Acceptable	≤ 0.005 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.005 mg/L. Humans may be subjected to nausea and vomiting at 15 mg/L. There is no accepted, economically effective method for direct removal of cadmium at high concentrations. Lime softening may help to remove cadmium when concentrations are less than 0.5 mg/L. For more information on this constituent in drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ EPA: Consumer Factsheet on: CADMIUM ▪ Well Educated Fact Sheet: Cadmium and Selenium
Chromium (Cr)	0.00066 mg/L	Acceptable	≤ 0.1 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.1 mg/L. Trivalent chromium may be nutritionally safe at a level of 0.20 mg/day. Hexavalent chromium has a deleterious effect on the liver, kidney, and respiratory organs with hemorrhagic effects, dermatitis, and ulceration of the skin for chronic and sub chronic exposure. Chromium can be treated by coagulation with filtration, lime softening (Cr III), and under specialized processes such as ion exchange and reverse osmosis. For more information on chromium in drinking water please visit:</p> <ul style="list-style-type: none"> ▪ EPA Factsheet on CHROMIUM ▪ MSU: Chromium, Mercury and Thallium Fact Sheet
Copper (Cu)	0.0019 mg/L	Acceptable	≤ 1.3 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 1.3 mg/L. Copper is an essential element, aiding in human metabolism. However, the ingestion of too much copper can be problematic. Ingested doses of copper, up to 100 mg, can cause symptoms of gastroenteritis, including nausea and vomiting. Coagulation/filtration, ion exchange, lime softening, and reverse osmosis are recommended treatment methods for copper. Lime softening is the most economical, with reverse osmosis the most expensive. For more information on copper in drinking water please visit:</p> <ul style="list-style-type: none"> ▪ EPA Factsheet on COPPER ▪ Well Educated Fact Sheet - Copper
Iron (Fe)	0.022 mg/L	Acceptable	≤ 0.3 mg/L**	<p>This water is considered satisfactory because it is less than the secondary standard of 0.3 mg/L. Solutions for Iron include: cation exchange, distillation, chlorination, or filtration. For more information on drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ EPA Drinking Water Criteria ▪ Well Educated Fact Sheet - Total Iron
Manganese (Mn)	0.920 mg/L	Unacceptable	≤ 0.05 mg/L**	<p>This water is considered objectionable because it exceeds the secondary standard of 0.05 mg/L. Manganese is an essential element in trace amounts for plants and animals. It is an important component of the enzyme processes that metabolizes proteins and energy in animals. Manganese is also involved in the formation of healthy joints. In humans, manganese is an important component in the processes of digestion and food absorption. It is also involved in the synthesis of fatty acids and cholesterol, metabolizing sugars, and the utilization of thiamine, biotin, and vitamin C. Foul taste and its tendency to stain plumbing and laundry are the main problems of manganese in drinking water. Cation exchange, distillation, chlorination, and/or filtration are recommended manganese treatment technologies. For more information on drinking water quality please visit:</p> <ul style="list-style-type: none"> ▪ EPA Drinking Water Criteria
Molybdenum (Mo)	0.024 mg/L	No standard		<p>At this time, there is no drinking water quality standard for molybdenum because no documented threshold of injury has been shown to occur. Molybdenum interferes with the metabolism of copper. This interference can create a copper deficiency. Molybdenum has been shown to cause joint pain, similar to gout in humans. Furthermore, laboratory studies have shown that molybdenum can alter the</p>

				<p>absorption rate of calcium into the bones. For more information on molybdenum in drinking water please visit:</p> <ul style="list-style-type: none"> ▪ Water Quality Criteria for Molybdenum
Nickel (Ni)	0.0038 mg/L	Acceptable	<= 0.1 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.1 mg/L. Nickel has a low toxicity comparable to zinc, manganese, and chromium. Nickel does not accumulate in tissues. Ion exchange, reverse osmosis, and/or lime softening are recommended treatment solutions. For more information on drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ EPA Drinking Water Criteria
Zinc (Zn)	0.0085 mg/L	Acceptable	<= 5 mg/L**	<p>This water is considered satisfactory because it is less than the secondary standard of 5.0 mg/L. In trace amounts, zinc is a necessary element for animals and plants. In mammals, it plays an important role in the formation of nucleic acids, RNA, and DNA. It is involved in the processes that promote healthy tissues in the body. Zinc is also necessary for hormone metabolism and Immune system responsiveness. Symptoms of zinc deficiency include growth reduction, skin changes, testicular disintegration, and reduced appetite. Zinc toxicity is not common, however zinc poisoning in humans, from consumables stored in galvanized containers, has been recorded. When detected in drinking water, it is likely that corrosion of piping has increased the concentration of zinc. Control of raw water to identify possible contamination and corrosion control measures may reduce the concentrations to a reasonable level. Otherwise, lime softening or cation exchange can remove zinc. For more information on zinc drinking water please visit:</p> <ul style="list-style-type: none"> ▪ EPA Drinking Water Criteria
4) Trace Elements Analysis				
Antimony (Sb)	0.0024 mg/L	Acceptable	<= 0.006 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.006 mg/L. The health effects of antimony include decreased growth and decrease longevity of humans. To remove antimony, coagulation/filtration or reverse osmosis is recommended. For more information on this constituent in drinking water, please go to this EPA link:</p> <ul style="list-style-type: none"> ▪ EPA: Consumer Factsheet on ANTIMONY ▪ Well Educated Fact Sheet - Antimony, Barium and Beryllium
Arsenic (As)	0.002 mg/L	Acceptable	<= 0.01 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.01 mg/L. Arsenic is poisonous in humans at 100 mg or more and has proven lethal at 130 mg. Studies have linked long-term exposure to arsenic in drinking water to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate. Non-carcinogenic effects of arsenic include cardiovascular, pulmonary, immunological, neurological, and endocrine effects. Short-term exposure to high doses of arsenic can cause other detrimental health effects, but are unlikely to occur from public water supplies in compliance with the existing arsenic standard of 0.01 mg/L. Accumulation in the body is expected to rise progressively in humans with low intake of arsenic. By using activated alumina, reverse osmosis, ion exchange, or electro dialysis, the concentration of arsenic can be significantly lowered. For more information on arsenic in drinking water please visit:</p> <ul style="list-style-type: none"> ▪ EPA Factsheet on ARSENIC ▪ Well Educated Fact Sheet- Arsenic
Beryllium (Be)	0.00047 mg/L	Acceptable	<= 0.004 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.004 mg/L. Beryllium is relatively harmless when ingested in food and water, except when ingested in very large or continuous dosage. Coagulation and filtration, lime softening, activated alumina, ion exchange, and reverse osmosis are recommended for removal of beryllium. For more information on beryllium in drinking water please visit:</p> <ul style="list-style-type: none"> ▪ EPA Factsheet on BERYLLIUM ▪ Well Educated Fact Sheet - Antimony, Barium and Beryllium
Cobalt (Co)	0.0005 mg/L	No standard		<p>At this time, there is no drinking water quality standard for cobalt because no documented threshold of injury has been shown to occur. For general information on drinking water quality, please visit:</p> <ul style="list-style-type: none"> ▪ CSU Fact Sheet 0.513 - Domestic Water Quality Criteria

Fluoride (F)	1.9 mg/L	Acceptable	≤ 4 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 4.0 mg/L. Fluoride accumulates in the mineralized tissues of the body, such as bones and teeth. People with diabetes and whose diets are deficient in calcium, manganese, iodine, or vitamin C are at a greater risk of fluoride toxicity. People receiving dialysis for malfunction or removal of a kidney are very susceptible to fluoride toxicity. The major source of fluoride pollution is wastewater from steel, aluminum, and phosphate fertilizer factories. Activated alumina adsorption, reverse osmosis, and modified lime softening are proven methods of fluoride concentration reduction. For more information on fluoride in drinking water please visit:</p> <ul style="list-style-type: none"> ■ EPA Factsheet on FLUORIDE
Lead (Pb)	0.00010 mg/L	Acceptable	≤ 0.015 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.015 mg/L. The health effects of lead are of a toxicological nature and are measured by blood levels. The effects are neurotoxic and include irreversible brain damage when the blood level exceeds 100-120 mg/L. Severe gastrointestinal symptoms are associated with the encephalopathic symptoms in adults when blood levels reach 40-60 mg/L. Lead has also been connected to problems with the reproductive, endocrine, and pulmonary systems. Children are considered to be more susceptible to lead poisoning than adults. Treatment of water with high lead concentrations include: raising the pH of treated water to reduce corrosivity; progressively eliminating street service lead lines; reducing chlorination levels by substituting disinfectants or reducing the chlorine demand; and, eliminating lead-soldered joints using tin-antimony solder instead of the traditional 50:50 lead-tin solder. For more information on lead in drinking water, please visit:</p> <ul style="list-style-type: none"> ■ EPA: Lead in Drinking Water ■ Well Educated Fact Sheet - Lead
Lithium (Li)	0.100 mg/L	No standard		<p>At this time, there is no drinking water quality standard for lithium because no documented threshold of injury has been shown to occur. For general information on drinking water quality please visit:</p> <ul style="list-style-type: none"> ■ CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
Mercury (Hg)	0.000031 mg/L	Acceptable	≤ 0.002 mg/L*	<p>This water is considered satisfactory because it is less than the primary standard of 0.002 mg/L. Mercury is hazardous to both animals and humans. Mercury compounds have been used in paints, drywall compounds, pharmaceuticals, and fungicides. Mercury can damage the nervous, reproductive, renal, and developmental systems of humans and animals. The chemical form of mercury and point of entry are important factors in the toxicity of mercury. Ingestion of inorganic mercury is mainly responsible for the deterioration of intestines and kidney damage in both animals and humans. Methyl mercury and short-chained organic mercury compounds kill cells in central nervous system which assist in sensory and coordination functions. The EPA has found that short-term exposure to mercury has the potential to cause kidney damage when people are exposed to it at levels above the 0.002 mg/L. The following treatment methods have been approved by EPA for removing mercury: coagulation/filtration; granular activated carbon; lime softening; reverse osmosis. For more information on mercury in drinking water please visit:</p> <ul style="list-style-type: none"> ■ EPA Factsheet on MERCURY ■ MSU: Chromium, Mercury and Thallium Fact Sheet
Selenium (Se)	0.071 mg/L	Unacceptable	≤ 0.05 mg/L*	<p>This water is not acceptable because it exceeds the primary standard of 0.05 mg/L. Although selenium is an essential nutrient at low levels, it is toxic at high levels (such as in the case of accidental exposure). Selenium is a trace element essential for humans and animals. However, it can be toxic at higher levels of concentration. The effects of selenium in water and food depend on the amount ingested and the length of exposure. Changes in respiratory, cardiovascular, gastrointestinal, musculoskeletal, renal, dermal, endocrine, and body weight have been documented in humans and animals exposed to selenium. Skin, nail, and hair damage are important symptoms of selenium toxicity. Signs of selenium poisoning in animals and humans include excessive salivation, shallow breathing, breath odor, and diarrhea. Other signs of acute selenium poisoning are vomiting, spasms, and death from respiratory failure. Reverse osmosis, anion</p>

				exchange, activated alumina, and/or distillation are recommended treatment solutions for water with high concentrations of selenium. For more information on selenium in drinking water please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on SELENIUM ▪ Well Educated Fact Sheet - Cadmium and Selenium
Silver (Ag)	0.000045 mg/L	Acceptable	<= 0.05 mg/L*	This water is considered satisfactory because it is less than the primary standard of 0.05 mg/L. Silver is removed by the liver after it combines with plasma proteins. The majority of silver is excreted in the bile of the feces. The skin and mucous tissues absorb the silver which is not excreted. People most susceptible to the toxic effects of silver are those with dietary or metabolism deficiencies of vitamin E or selenium. Also at greater risk are people with liver problems and those with high selenium levels in their diet. Treatments for removing silver are: coagulation/filtration, submicron filtration/activated carbon, ion exchange, distillation, and reverse osmosis. For more information on drinking water please visit: <ul style="list-style-type: none"> ▪ EPA Drinking Water Criteria
Thallium (Tl)	0.000066 mg/L	Acceptable	<= 0.002 mg/L*	This water is considered satisfactory because it is less than the primary standard of 0.002 mg/L. High levels of thallium can cause damage to the kidney, liver, brain and intestine. Treatment can be accomplished with cation exchange and distillation. For more information on this constituent in drinking water, please visit: <ul style="list-style-type: none"> ▪ EPA: Consumer Factsheet on THALLIUM ▪ MSU: Chromium, Mercury and Thallium Fact Sheet
Vanadium (V)	0.0016 mg/L	No standard		At this time, there is no drinking water quality standard for vanadium because no documented threshold of injury has been shown to occur. For general information on drinking water quality please visit: <ul style="list-style-type: none"> ▪ CSU Fact Sheet 0.513 - Domestic Water Quality Criteria
7) Volatile Contaminants				
benzene	0.16 ug/L	Acceptable	<= 5 ug/L*	This water is considered satisfactory because it is less than the primary standard of 5.0 ug/L. The potential health consequences associated with drinking water that exceeds this standard over a prolonged period of time are anemia, decrease in blood platelets, and an increased risk of cancer. Treatment can be accomplished with activated carbon. Also, this compound is a potential indicator of activity related to oil & gas exploration and/or leaking petroleum facilities. For more information on benzene in drinking water please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on BENZENE ▪ Agency for Toxic Substances and Disease Registry
o-dichlorobenzene	0.15 ug/L	Acceptable	<= 600 ug/L*	This water is considered satisfactory because it is less than the primary standard of 600 ug/L. The potential health consequences associated with drinking water that exceeds this standard over a prolonged period of time are liver, kidney, or circulatory system problems. Treatment can be accomplished with activated carbon. Also, this compound is a potential indicator of activity related to oil & gas exploration and/or leaking petroleum facilities. For more information on this constituent in drinking water please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on ORTHO-DICHLOROBENZENE (o-DCB) ▪ Agency for Toxic Substances and Disease Registry
p-dichlorobenzene	0.16 ug/L	Acceptable	<= 75 ug/L*	This water is considered satisfactory because it is less than the primary standard of 75.0 ug/L. The potential health consequences associated with drinking water that exceeds this standard over a prolonged period of time are anemia and may also be linked to liver, kidney or spleen damage and changes in the blood. Treatment can be accomplished with activated carbon. Also, this compound is a potential indicator of activity related to oil & gas exploration and/or leaking petroleum facilities. For more information on this constituent in drinking water, please go to this EPA link: <ul style="list-style-type: none"> ▪ EPA Factsheet on PARA-DICHLOROBENZENE (p-DCB) ▪ Agency for Toxic Substances and Disease Registry
				This water is considered satisfactory because it is less than the primary standard of 700 ug/L. When humans are exposed to ethylbenzene at levels above 700 ug/L for short periods of time, the following health consequences may occur: drowsiness, fatigue, respiratory irritation,

ethylbenzene	0.16 ug/L	Acceptable	<= 700 ug/L*	and headache. Furthermore, ethylbenzene at levels above 700 ug/L, over a person's lifetime, can cause damage to the liver, kidneys, eyes, and central nervous system. Treatment can be accomplished with activated carbon. Also, this compound is a potential indicator of activity related to oil & gas exploration and/or leaking petroleum facilities. For more information on ethylbenzene in drinking water, please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on ETHYLBENZENE ▪ Agency for Toxic Substances and Disease Registry
monochlorobenzene	0.17 ug/L	Acceptable	<= 100 ug/L*	This water is considered satisfactory because it is less than the primary standard of 100 ug/L. The potential health consequences associated with drinking water that exceeds this standard over a prolonged period of time are liver or kidney problems. Also, this compound is a potential indicator of activity related to oil & gas exploration and/or leaking petroleum facilities. For general information on drinking water quality please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on CHLOROBENZENE ▪ Agency for Toxic Substances and Disease Registry
styrene	0.17 ug/L	Acceptable	<= 100 ug/L*	This water is considered satisfactory because it is less than the primary standard of 100 ug/L. The potential health consequences associated with drinking water that exceeds this standard over a prolonged period of time are liver, kidney, and/or circulatory system problems. For more information on styrene in drinking water please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on STYRENE
toluene	0.17 ug/L	Acceptable	<= 1000 ug/L*	This water is considered satisfactory because it is less than the primary standard of 1000 ug/L. The potential health consequences associated with drinking water that exceeds this standard over a prolonged period of time are nervous system, kidney, or liver problems. Toluene is found naturally in coal and crude oil. It is also used in carpet cleaners, paints, cosmetics, upholstery, cigarettes, pesticides and gasoline. Toluene can be removed from water by biodegradation and volatilization, however does not usually hydrolyze or adsorb into sediments. Toluene is volatile, with a half-life of up to two weeks in water and may leach into groundwater when deposited onto land. Also, this compound is a potential indicator of activity related to oil & gas exploration and/or leaking petroleum facilities. For more information on toluene in drinking water please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on TOLUENE ▪ Agency for Toxic Substances and Disease Registry
trichloroethane	0.27 ug/L	Acceptable	<= 200 ug/L*	This water is considered satisfactory because it is less than the primary standard of 200 ug/L. The potential health consequences associated with drinking water that exceeds this standard over a prolonged period of time are liver, nervous system, or circulatory problems. For more information on this constituent in drinking water, please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on 1,1,1-TRICHLOROETHANE
xylenes (total)	0.19 ug/L	Acceptable	<= 10000 ug/L*	This water is considered satisfactory because it is less than the primary standard of 10,000 ug/L. The potential health consequence associated with drinking water that exceeds this standard over a prolonged period of time is nervous system damage. Also, this compound is a potential indicator of activity related to oil & gas exploration and/or leaking petroleum facilities. For more information on xylene in drinking water please visit: <ul style="list-style-type: none"> ▪ EPA Factsheet on XYLENES ▪ Agency for Toxic Substances and Disease Registry

* MCL (Primary Standard)

** SMCL (Secondary Standard)

*** Upper Limit Guideline

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Interpretations of Irrigation Water Quality for Colorado

Test Name	Lab Result	Interpretation	Excellent	Satisfactory	Additional Comments
1) Routine Water Analysis					
Alkalinity as CaCO ₃	640 mg/L	No guideline			Alkalinity as CaCO ₃ is not commonly used alone to evaluate irrigation water quality so there is no numeric guideline for this parameter. Alkalinity as measured as HCO ₃ and CO ₃ and are evaluated separately. For more information on alkalinity in irrigation water please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
Bicarbonate	640 mg/L	No guideline			High concentrations (>100 mg L ⁻¹) of bicarbonate and carbonate can be detrimental to the soil and are usually associated with high pH water. There is no set irrigation water quality level for bicarbonate problems, because the problems it causes are dependent upon soil and water characteristics. When bicarbonate and carbonate enter the soil, they tie up calcium as CaCO ₃ and lower its concentration in the soil solution. This process can increase the sodium hazard as measured as SAR and cause infiltration and soil physical problems. For general information on bicarbonate in irrigation water, please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
Boron (B)	0.480 mg/L	Excellent	< 0.5 mg/L***	0.5 - 2 mg/L***	This water is suitable for irrigation use on sensitive crops because it is less than 0.50 mg/l. Boron is essential to plant growth, with optimum yields for many crops supplied with a few-tenths mg/l in nutrient solutions. However, boron toxicity is highly dependent on plant type and can be toxic to many sensitive plants (e.g., citrus) at less than 0.5 mg/L. Most grasses are relatively tolerant to boron at 2.0 to 10 mg/L. North Dakota soils and irrigation waters contain enough boron that additional application is not required in most situations. Fertilization may cause toxicity if boron is present in the water. Boron toxicity is closely associated with problems of salinity in regions that are hot and arid. Boron in irrigation water is one of the main causes of boron toxicity in plants. Symptoms of boron toxicity in plants include stunted growth, leaf browning, chlorosis, wilting, mildew, and germination problems. <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
					At this time, there is no irrigation water quality guideline for calcium because no documented

Calcium (Ca)	110 mg/L	No guideline	threshold of crop injury has been shown to occur. For general information on irrigation water quality please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture 		
Carbonate (CO ₃)	1.1 mg/L	No guideline	High concentrations (>100 mg L ⁻¹) of carbonate and bicarbonate can be detrimental to the soil and are usually associated with high pH water. There is no set irrigation water quality level for bicarbonate problems, because the problems it causes are dependent upon soil and water characteristics. When bicarbonate and carbonate enter the soil, they tie up calcium as CaCO ₃ and lower its concentration in the soil solution. This process can increase the sodium hazard as measured as SAR and cause infiltration and soil physical problems. For more information on irrigation water quality please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture 		
Chloride (Cl)	440 mg/L	Objectionable	< 20 mg/L**	20 - 350 mg/L**	This water may not be suitable for irrigation use because it exceeds the guideline of 350 mg/l. Although chloride is essential to plants in low amounts, it will cause toxicity to plants when levels exceed 350 mg/l. Like sodium, high chloride concentrations cause more problems when applied with sprinkler irrigation. Leaf burn under sprinkler from both sodium and chloride can be reduced by night time irrigation or application on cool, cloudy days. For more information on chloride in irrigation water please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
Electrical Conductivity (EC)	6800 umhos/cm	Objectionable	< 249.99999 umhos/cm***	249.99999 - 1999.99991 umhos/cm***	The electrical conductivity (EC _w) of a water sample is a measure of the amount of minerals dissolved in the water and is proportional to the Total Dissolved Solids (TDS). The primary effect of high EC _w water on crop productivity is the inability of the plant to compete with ions in the soil solution for water (physiological drought). The higher the EC, the less water is available to plants, even though the soil may appear wet. Because plants can only transpire "pure" water, usable plant water in the soil solution decreases dramatically as EC increases. For more information on EC in irrigation water, please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Assessing the Suitability of Water (Quality) for Irrigation - Salinity and Sodium Water Quality for Agriculture
Magnesium (Mg)	100 mg/L	No guideline	At this time, there is no irrigation water quality guideline for magnesium because no documented threshold of crop injury has been shown to occur. For general information on irrigation water quality please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture 		
NO ₃ -N + NO ₂ -N (Total)	1.55 mg/L	No guideline			
					This water quality is considered excellent because it falls between the excellence pH guideline of 7 to 7.5. At low pH (acidic) levels, irrigation equipment may corrode. At high pH (alkaline) levels, certain nutrients

pH	7.47 pH	Excellent	7 - 7.5	6.5 - 8.5***	<p>may be less available to plants. For more information on irrigation water quality please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
Potassium (K)	5.1 mg/L	No guideline			<p>At this time, there is no irrigation water quality guideline for potassium because no documented threshold of crop injury has been shown to occur. For general information on irrigation water, please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
Sodium Adsorption Ratio (SAR)	19.9 sar	Objectionable		<= 10 sar	<p>This ratio quantifies the proportion of sodium (Na+) to calcium (Ca++) and magnesium (Mg++) ions in a water sample. In the soil, calcium will flocculate (hold together), while sodium disperses (pushes apart) soil particles leading to poor soil condition. Many factors including soil texture, organic matter, crop type, climate, irrigation system, and management impact how sodium in irrigation water affects soils. Sodium in irrigation water can cause toxicity problems for some crops, especially when the water is applied with a sprinkler system. SAR and ECw are interdependent and thus irrigation suitability is characterized by both values. The following is a breakdown of the general classifications of irrigation water based upon the SAR values. Course Sand to Fine Sandy Loam: maximum EC of 3000 micromhos per centimeter and maximum SAR of 12; Loam and Silt Loam: maximum EC of 3000 micromhos per centimeter and maximum SAR of 9; Very Fine Sandy Loam to Silty Clay Loam: maximum EC of 2250 micromhos per centimeter and maximum SAR of 9; Loam to Clay Loam: maximum EC of 1500 micromhos per centimeter and maximum SAR of 6. For more information on irrigation water quality please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Assessing the Suitability of Water (Quality) for Irrigation - Salinity and Sodium Water Quality for Agriculture
Sodium (Na)	1200 mg/L	Objectionable		<= 350 mg/L***	<p>This water may not be suitable for irrigation use because it exceeds the guideline of 350 mg/l. Like chloride, high sodium concentrations cause more problems when applied with sprinkler irrigation. Leaf burn under sprinkler from both sodium and chloride can be reduced by night time irrigation or application on cool, cloudy days. High sodium water should also be evaluated in related to Ca and Mg concentrations by calculating and an SAR. For more information on sodium in irrigation water, please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
Sulfate (SO4)	2700 mg/L	No guideline			<p>At this time, there is no irrigation water quality guideline for sulfate. The sulfate ion is a major contributor to salinity in many North Dakota irrigation waters sources. However, toxicity is rarely a problem, except at very high concentrations where high sulfate may interfere with uptake of other nutrients. Sulfate in irrigation water has some fertility benefits. For more information on irrigation water quality please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
					This water is not recommended for irrigation use

Total Dissolved Solids (TDS)	4900 mg/L	Objectionable	< 1000 mg/L***	1000 - 2000 mg/L***	<p>because it exceeds the guideline of 2000 mg/l. Water with high levels of TDS are saline and can harm crops. TDS is a direct measurement of the quantity of dissolved cations and anions in the irrigation water. EC is an indirect measure of the quantity of ions in the water. For long term irrigation of the same of land with sprinklers, the TDS should not exceed 2500 for the coarse soils (sand to fine sandy loams), 1800 for finer soils (very fine sandy loam to silty clay loams) and 1000 for the finest soils that are irrigable (loams to clay loams). For more information on irrigation water, please visit:</p> <ul style="list-style-type: none"> ■ CSU Pub 0.506 Irrigation Water Quality Criteria ■ Assessing the Suitability of Water (Quality) for Irrigation - Salinity and Sodium ■ Water Quality for Agriculture
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Test Name	Lab Result	Interpretation	Suitable	Additional Comments
3) Individual Metals Analysis				
Aluminum (Al)	0.018 mg/L	Acceptable	<= 5 mg/L***	<p>This water may be suitable for irrigation use because it is less than the guideline of 5.0 mg/l. Aluminum can cause plants to not be productive in acidic soils, but soils at pH 5.5 to 8.0 will precipitate the ion and eliminate toxicity. The effects of aluminum toxicity can be similar to phosphorus deficiency with plants having small leaves, stunting, and purple coloring. The effects of aluminum toxicity may also be similar to calcium deficiency with symptoms of leaf curl. For more information on aluminum in irrigation water please visit:</p> <ul style="list-style-type: none"> ■ Water Quality for Agriculture
Barium (Ba)	0.021 mg/L	No guideline		<p>At this time, there is no irrigation water quality guideline for barium. For more information on irrigation water quality please visit:</p> <ul style="list-style-type: none"> ■ CSU Pub 0.506 Irrigation Water Quality Criteria ■ Water Quality for Agriculture
Cadmium (Cd)	0.000040 mg/L	Acceptable	<= 0.01 mg/L***	<p>This water is recommended for irrigation use because it is less than the guideline of 0.01 mg/l. Cadmium can be toxic to beans, beets, and turnips at concentrations as low as 0.1 mg/L in nutrient solution. Low limits for cadmium are recommended because cadmium can accumulate in plant tissue and become harmful for humans consuming the crop. For more information on cadmium in irrigation water, please visit:</p> <ul style="list-style-type: none"> ■ Water Quality for Agriculture
Chromium (Cr)	0.00066 mg/L	Acceptable	<= 0.1 mg/L***	<p>This water may be suitable for irrigation use because it is less than the guideline of 0.1 mg/l. Chromium is not generally recognized as an essential growth element and conservative limits are recommended due to lack of research data on toxicity to plants. For more information on chromium in irrigation water please visit:</p> <ul style="list-style-type: none"> ■ Water Quality for Agriculture
Copper (Cu)	0.0019 mg/L	Acceptable	<= 0.2 mg/L***	<p>This water may be suitable for irrigation use because it is less than the guideline of 0.2 mg/l. Copper is an important nutrient for plants. However, copper is toxic to a number of plants at 0.1 to 1.0 mg/L in nutrient solution. The amount of copper available to plants depends on numerous soil factors, including soil texture, composition, and type. Its availability also depends on soil microbiology, pH, moisture, and species of plant/crop. Typically, copper has the least availability in soils with an elevated pH and/or a high content of organic materials. For more information on copper in irrigation water please visit:</p> <ul style="list-style-type: none"> ■ Water Quality for Agriculture
Iron (Fe)	0.022 mg/L	Acceptable	<= 5 mg/L***	<p>This water may be suitable for irrigation use because it is less than the guideline of 5.0 mg/l. Iron is not toxic to plants in aerated soils, but can contribute to soil acidification and reduced plant availability of essential phosphorus and molybdenum. Sprinkler irrigation may cause staining on plants and wetted objects. For more information on iron in irrigation water, please visit:</p> <ul style="list-style-type: none"> ■ Water Quality for Agriculture

Manganese (Mn)	0.920 mg/L	Unacceptable	≤ 0.2 mg/L***	This water may not be suitable for irrigation use because it exceeds the guideline of 0.2 mg/l. Manganese is toxic to a number of crops at a few-tenths to a few mg/l in acid soils. For more information on manganese in irrigation water, please visit: <ul style="list-style-type: none"> Water Quality for Agriculture
Molybdenum (Mo)	0.024 mg/L	Unacceptable	≤ 0.01 mg/L***	This water may not be suitable for irrigation use because it exceeds the guideline of 0.01 mg/l. Molybdenum is nontoxic to plants at normal concentrations in soil and water. The main problem related to irrigating with water which has high molybdenum concentrations is that molybdenum is absorbed and concentrated by plants. Although plant growth is rarely affected by high molybdenum concentrations, high concentrations in the plants can be toxic to ruminant animals that feed on the plants. For more information on molybdenum in irrigation water please visit: <ul style="list-style-type: none"> Water Quality for Agriculture
Nickel (Ni)	0.0038 mg/L	Acceptable	≤ 0.2 mg/L***	This water may be suitable for irrigation use because it is less than the guideline of 0.2 mg/l. Nickel is toxic to a number of plants in the 0.5 to 1.0 mg/l range. Its toxicity is reduced in neutral or alkaline soils. For more information on nickel in irrigation water, please visit: <ul style="list-style-type: none"> Water Quality for Agriculture
Zinc (Zn)	0.0085 mg/L	Acceptable	≤ 2 mg/L***	This water may be suitable for irrigation use because it is less than the guideline of 2.0 mg/l. Zinc is toxic to many plants at widely varying concentrations. Zinc toxicity is reduced with increased pH (6 or above) and in fine-textured or organic soils. For more information on zinc in irrigation water please visit: <ul style="list-style-type: none"> Water Quality for Agriculture

4) Trace Elements Analysis

Antimony (Sb)	0.0024 mg/L	No guideline		At this time, there is no irrigation water quality guideline for antimony. For more information on Irrigation water quality please visit: <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
Arsenic (As)	0.002 mg/L	Acceptable	≤ 0.1 mg/L***	This water may be suitable for irrigation use because it is less than the guideline of 0.1 mg/l. Arsenic toxicity to plants varies widely, ranging from 12 mg/l for sudan grass to less than 0.05 mg/l for rice. Arsenic has also been shown to reduce growth in green beans. For more information on arsenic in irrigation water please visit: <ul style="list-style-type: none"> Water Quality for Agriculture
Beryllium (Be)	0.00047 mg/L	Acceptable	≤ 0.1 mg/L***	This water may be suitable for irrigation use because it is less than the guideline of 0.1 mg/l. Beryllium toxicity to plants varies widely, ranging from 5 mg/L for kale to 0.5 mg/L for bush beans. For more information on beryllium in irrigation water quality please visit: <ul style="list-style-type: none"> Water Quality for Agriculture
Cobalt (Co)	0.0005 mg/L	Acceptable	≤ 0.05 mg/L***	This water may be suitable for irrigation use because it is less than the guideline of 0.05 mg/l. Cobalt is toxic to tomato plants at 0.1 mg/L in nutrient solution. It also has the tendency to be inactivated by neutral and alkaline soils. For more information on cobalt in irrigation water, please visit: <ul style="list-style-type: none"> Water Quality for Agriculture
Fluoride (F)	1.9 mg/L	Unacceptable	≤ 1 mg/L	This water may not be suitable for irrigation use because it exceeds the guideline of 1.0 mg/l. This concentration is designed to protect crops grown in acid soils since Fluoride is inactivated by neutral and alkaline soils. For more information on fluoride in irrigation water please visit: <ul style="list-style-type: none"> Water Quality for Agriculture
Lead (Pb)	0.00010 mg/L	Acceptable	≤ 5 mg/L***	This water may be suitable for irrigation use because it is less than the guideline of 5.0 mg/l. Generally, lead is retained in soils by sorption and/or by forming with organic and inorganic constituents in soils. Lead enters plants through the leaves and root system. The following conditions determine the amount of lead a plant will absorb: lead concentration and form, soil (pH, texture, moisture, cation exchange capacity, and content of organic matter), species of crop, rooting depth, and climate. Furthermore, lead in irrigation water can inhibit plant cell

				growth at very high concentrations. For more information on lead in irrigation water please visit: <ul style="list-style-type: none"> ▪ Water Quality for Agriculture
Lithium (Li)	0.100 mg/L	Acceptable	<= 2.5 mg/L***	This water may be suitable for irrigation use because it is less than the guideline of 2.5 mg/l. However, lithium can be tolerated by most crops at up to 5 mg/L and is mobile in soil. It is toxic to citrus plants at low doses and the recommended limit for citrus crops is 0.075 mg/l. For more information on lithium in irrigation water, please visit: <ul style="list-style-type: none"> ▪ Water Quality for Agriculture
Mercury (Hg)	0.000031 mg/L	No guideline		At this time, there is no irrigation water quality guideline for mercury. For more information on irrigation water, please visit: <ul style="list-style-type: none"> ▪ CSU Pub 0.506 Irrigation Water Quality Criteria ▪ Water Quality for Agriculture
Selenium (Se)	0.071 mg/L	Unacceptable	<= 0.02 mg/L***	This water may not be suitable for irrigation use because it exceeds the guideline of 0.02 mg/l. Selenium is toxic to some plants at low concentrations and to livestock if forage is grown in soils with high levels of available selenium. Selenium poisoning of animals has been documented in areas where soils have high selenium concentrations. Conversely, plants and animals cultivated in areas with low selenium concentrations have the potential to develop diseases as a result of selenium deficiency. For more information on selenium in irrigation water please visit: <ul style="list-style-type: none"> ▪ Water Quality for Agriculture
Silver (Ag)	0.000045 mg/L	No guideline		At this time, there is no irrigation water quality guideline for silver. For more information on irrigation water quality please visit: <ul style="list-style-type: none"> ▪ CSU Pub 0.506 Irrigation Water Quality Criteria ▪ Water Quality for Agriculture
Thallium (Tl)	0.000066 mg/L	No guideline		At this time, there is no irrigation water quality guideline for thallium. For more information on irrigation water, please visit: <ul style="list-style-type: none"> ▪ CSU Pub 0.506 Irrigation Water Quality Criteria ▪ Water Quality for Agriculture
Vanadium (V)	0.0016 mg/L	Acceptable	<= 0.1 mg/L	This water may be suitable for irrigation use because it is less than the guideline of 0.1 mg/l. Vanadium is toxic to many plants at relatively low concentrations. For more information on Vanadium in irrigation water please visit: <ul style="list-style-type: none"> ▪ Water Quality for Agriculture
7) Volatile Contaminants				
benzene	0.16 ug/L	No guideline		At this time, there is no irrigation water quality guideline for benzene. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water quality please visit: <ul style="list-style-type: none"> ▪ CSU Pub 0.506 Irrigation Water Quality Criteria ▪ Water Quality for Agriculture
o-dichlorobenzene	0.15 ug/L	No guideline		At this time, there is no irrigation water quality guideline for o-dichlorobenzene. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water, please visit: <ul style="list-style-type: none"> ▪ CSU Pub 0.506 Irrigation Water Quality Criteria ▪ Water Quality for Agriculture
p-dichlorobenzene	0.16 ug/L	No guideline		At this time, there is no irrigation water quality guideline for p-dichlorobenzene. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water quality please visit: <ul style="list-style-type: none"> ▪ CSU Pub 0.506 Irrigation Water Quality Criteria ▪ Water Quality for Agriculture
ethylbenzene	0.16 ug/L	No guideline		At this time, there is no irrigation water quality guideline for ethylbenzene. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water quality please visit: <ul style="list-style-type: none"> ▪ CSU Pub 0.506 Irrigation Water Quality Criteria

			<ul style="list-style-type: none"> Water Quality for Agriculture
monochlorobenzene	0.17 ug/L	No guideline	<p>At this time, there is no irrigation water quality guideline for monochlorobenzene. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water, please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
styrene	0.17 ug/L	No guideline	<p>At this time, there is no irrigation water quality guideline for styrene. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water quality please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
toluene	0.17 ug/L	No guideline	<p>At this time, there is no irrigation water quality guideline for toluene. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water quality please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
trichloroethane	0.27 ug/L	No guideline	<p>At this time, there is no irrigation water quality guideline for trichloroethane 111. However, crop injury could occur but, these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water, please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture
xylenes (total)	0.19 ug/L	No guideline	<p>At this time, there is no irrigation water quality guideline for xylenes. However, crop injury could occur but these levels would be plant specific and at concentrations not typically found in irrigation water. For more information on irrigation water quality please visit:</p> <ul style="list-style-type: none"> CSU Pub 0.506 Irrigation Water Quality Criteria Water Quality for Agriculture

* MCL (Primary Standard)

** SMCL (Secondary Standard)

*** Upper Limit Guideline

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Interpretations of Livestock Water Quality for Colorado

Test Name	Lab Result	Interpretation	Excellent	Satisfactory	Additional Comments
1) Routine Water Analysis					
Alkalinity as CaCO ₃	640 mg/L	No guideline			At this time, there is no livestock water quality guideline for Alkalinity. For more information on livestock drinking water, please visit: ▪ NSDU Extension - Livestock and Water Quality
Bicarbonate	640 mg/L	No guideline			At this time, there is no livestock water quality guideline for bicarbonate because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit: ▪ NSDU Extension - Livestock and Water Quality
Boron (B)	0.480 mg/L	Satisfactory		<= 5 mg/L***	This water may be satisfactory for some livestock because it is less than the guideline of 5.0 mg/L. Excess boron in the diets of livestock may decrease feed consumption and cause weight loss. For more information on boron in livestock water, please go to: ▪ Water Quality Criteria for Boron ▪ Water Quality for Agriculture
Calcium (Ca)	110 mg/L	No guideline			At this time, there is no livestock water quality guideline for calcium because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please go to Colorado State University Extension's fact sheet on livestock drinking water quality at: ▪ EPA: Drinking Water Contaminants
Carbonate (CO ₃)	1.1 mg/L	No guideline			At this time, there is no livestock water quality guideline for carbonate because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please go to Colorado State University Extension's fact sheet on livestock drinking water quality at: ▪ EPA: Drinking Water Contaminants
Chloride (Cl)	440 mg/L	Satisfactory		<= 600 mg/L***	This water is satisfactory for some livestock because it is less than the guideline of 600 mg/L. For more information on chloride in livestock drinking water please go to the following website: ▪ BC Ministry of Environment: Ambient Water Quality Guidelines for Chloride
Electrical Conductivity (EC)	6800 umhos/cm	No guideline			At this time, there is no livestock drinking water quality guideline for electrical conductivity because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit: ▪ NSDU Extension - Livestock and Water Quality

Magnesium (Mg)	100 mg/L	No guideline			At this time, there is no livestock water quality guideline for magnesium because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit: ▪ NSDU Extension - Livestock and Water Quality
Nitrate as Nitrogen (NO ₃ -N)	1.3 mg/L	Satisfactory		<= 112 mg/L*	This water is satisfactory for some livestock because it is less than the guideline of 112 mg/L as nitrate-nitrogen (NO ₃ -N). High nitrate levels in feed combined with nitrate in water can cause nitrate poisoning and abortion. For more information on nitrate in livestock drinking water please go to the following website: ▪ Water Quality for Wyoming Livestock & Wildlife ▪ BC Ministry of Environment Water Quality Criteria for Nitrogen ▪ Water Quality for Agriculture
Nitrite as Nitrogen (NO ₂ -N)	0.25 mg/L	Satisfactory		<= 10 mg/L*	This water is satisfactory for some livestock because it is less than the guideline of 10 mg/L as nitrite-nitrogen (NO ₂ -N). Like nitrate, nitrite may also harm the oxygen-carrying capacity of the blood by reducing hemoglobin to methemoglobin. For more information on nitrite in livestock drinking water please visit: ▪ Water Quality for Wyoming Livestock & Wildlife ▪ BC Ministry of Environment Water Quality Criteria for Nitrogen ▪ Water Quality for Agriculture
NO ₃ -N + NO ₂ -N (Total)	1.55 mg/L	Satisfactory		<= 100 mg/L***	This water is satisfactory for some livestock because it is less than the guideline of 100 mg/L as nitrate-nitrogen (NO ₃ -N). Make sure that your results are entered as nitrate-nitrogen (NO ₃ -N) and not as nitrate (NO ₃ -). High nitrate levels in feed combined with nitrate in water can cause nitrate poisoning and abortion. Water with greater than 300 mg/L of NO ₃ -N should not be used for swine or poultry. For more information on nitrate in livestock drinking water, please visit: ▪ Water Quality for Wyoming Livestock & Wildlife ▪ BC Ministry of Environment Water Quality Criteria for Nitrogen ▪ Water Quality for Agriculture
pH	7.47 pH	Satisfactory	0 - 0	5.5 - 9	This water is satisfactory for some livestock because it does falls between the guideline of 5.5 to 9.0. Water with a pH below 7 is considered acidic, while water with a pH above 7 is alkaline. If pH is lower than 5.5, a reduction in feeding and acidosis may occur in cattle. A low pH may also accelerate certain antibacterial agents being delivered through the water system (i.e. sulphonamides). The efficiency of chlorination is diminished when pH is high. The commonly touted acceptable ranges (a low of 5.5 6.5 and a high of 7.5 9.0) are excessively conservative from a strictly animal health standpoint, at least on the acid side. However, there are not sufficient experimental and/or clinical data to offer a specific alternative. For more information on livestock drinking water please visit: ▪ NDSU: Livestock and Water (2008)
Potassium (K)	5.1 mg/L	No guideline			At this time, there is no livestock water quality guideline for potassium because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit: ▪ NSDU Extension - Livestock and Water Quality
Sodium (Na)	1200 mg/L	Objectionable		<= 1000 mg/L***	This water is not considered acceptable because it exceeds the guideline of 1000 mg/L. Serious effects, including death, become likely at 5000 mg Na/L. We recommend keeping drinking water Na concentrations less than 1000 mg/L (chronic exposure criteria). This assumes normal feedstuff Na concentration and no other water sources; these concentrations should protect against acute

				<p>lethality or chronically poor performance. Short term exposure (days - weeks) should not exceed 4000 mg Na/L. For more information on sodium in livestock drinking water please visit:</p> <ul style="list-style-type: none"> ▪ Water Quality for Wyoming Livestock & Wildlife
Sulfate (SO ₄)	2700 mg/L	Objectionable	<= 1000.001 mg/L***	<p>This water may be objectionable for some livestock because it exceeds the guideline of 1,000 mg/L. High sulfate levels have a laxative effect on livestock. In many animals, sulfate affects how copper is metabolized. High sulfate water consumption usually requires that animals receive an increase in copper and a decrease of other minerals. Assuming normal feedstuff S concentrations, keeping water SO₄²⁻ concentrations less than 1800 mg/L should minimize the possibility of acute death in cattle. Concentrations less than 1000 mg/L (chronic exposure criteria) should not result in any easily measured loss in performance. Long-term consumption result in poor performance. Short-term exposure (day - weeks) should not exceed 1800 mg SO₄²⁻/L. For more information on sulfate in livestock water, please go to:</p> <ul style="list-style-type: none"> ▪ Water Quality for Wyoming Livestock & Wildlife
Total Dissolved Solids (TDS)	4900 mg/L	Objectionable	<= 3000 mg/L***	<p>Recommendations for livestock water use based on total dissolved solids (TDS). TDS Comments (ppm or mg/L) Less than 3,000 Usually satisfactory for most livestock. 3,000 - 5,000 May not cause adverse effects to adult livestock. Growing/young livestock could be affected by looseness or poor feed conversion. At levels near 5,000 ppm, the water is unacceptable for poultry. 5,000 - 7,000 Should not be used for pregnant or lactating females. Usually a laxative and may result in reduced water intake. 7,000 - 10,000 Do not use for swine. Do not use for pregnant or lactating ruminants or horses. 10,000 or more May cause brain damage or death.</p> <ul style="list-style-type: none"> ▪ NDSU: Livestock and Water (2008)

Test Name	Lab Result	Interpretation	Acceptable	Additional Comments
3) Individual Metals Analysis				
Aluminum (Al)	0.018 mg/L	Acceptable	<= 5 mg/L***	<p>This water is considered acceptable because it is less than the guideline of 5.0 mg/L. Dietary aluminum levels of chickens that exceed 4000 mg Al/kg, have been shown to cause phosphorus deficiencies in chicks. For more information on aluminum in livestock water, please visit:</p> <ul style="list-style-type: none"> ▪ BC Ministry of Environment Water Quality Criteria for Aluminum ▪ Water Quality for Agriculture
Barium (Ba)	0.021 mg/L	Acceptable	<= 10 mg/L	<p>This water is considered acceptable because it is less than the guideline of 10 mg/L. Barium can be introduced to water supplies by human activities such as metal refining and oil drilling but can also be present in water naturally. Observed effects on grazing cattle from barium poisoning include protruding tongues, salivation, watery diarrhea, muscle tremors, progressing to paralysis and death. For more information on barium in livestock water, please visit:</p> <ul style="list-style-type: none"> ▪ Water Quality for Wyoming Livestock & Wildlife
Cadmium (Cd)	0.000040 mg/L	Acceptable	<= 0.05 mg/L***	<p>This water is considered acceptable because it is less than the guideline of 0.05 mg/L. Cadmium can be introduced to water by human activities such as metal refining but can also be present in water naturally. For more information on livestock drinking water please review "Mineral Tolerance of Animals", 2nd Revised Edition 2005, National Research Council, or visit the following websites:</p> <ul style="list-style-type: none"> ▪ NDSU Extension - Livestock and Water Quality
Chromium (Cr)	0.00066	Acceptable	<= 1	<p>This water is considered acceptable because it is less than the guideline of 1 mg/L. Chromium can be introduced to water by human activities such as discharge from steel and pulp mills but can also be present in water naturally. For more information on livestock drinking water please review "Mineral Tolerance of Animals", 2nd Revised</p>

	mg/L		mg/L***	Edition 2005, National Research Council, or visit the following websites: <ul style="list-style-type: none"> ■ NSDU Extension - Livestock and Water Quality ■ Water Quality for Agriculture
Copper (Cu)	0.0019 mg/L	Acceptable	<= 0.5 mg/L***	This water is considered acceptable because it is less than the guideline of 0.5 mg/L. Copper is an essential trace element that aids in animal metabolism and is usually added to the feed of livestock. However, too much copper in livestock water or diet will build up in the tissues of animals and can cause kidney, spleen, liver, and nervous system disorders. At very high levels, copper intake by livestock can be fatal. Sheep and calves are usually more sensitive to copper poisoning than are swine and poultry. For more information on copper in livestock water, please review "Mineral Tolerance of Animals", 2nd Revised Edition 2005, National Research Council, or visit the following websites: <ul style="list-style-type: none"> ■ Well Educated - Suitability of Water for Livestock ■ Water Quality for Agriculture
Iron (Fe)	0.022 mg/L	No guideline		At this time, there is no livestock drinking water quality guideline for Iron because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit: <ul style="list-style-type: none"> ■ NSDU Extension - Livestock and Water Quality
Manganese (Mn)	0.920 mg/L	No guideline		At this time, there is no livestock drinking water quality guideline for manganese because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit: <ul style="list-style-type: none"> ■ NSDU Extension - Livestock and Water Quality
Molybdenum (Mo)	0.024 mg/L	Acceptable	<= 0.3 mg/L***	This water is considered acceptable because it is less than the guideline of 0.3 mg/L. Molybdenum is an essential element, but it is also toxic when linked to intake of copper sulfate. The major toxic effect of molybdenum is that it interferes with copper metabolism. This generates a copper deficiency in animals if sulfate is in the water or feed. When the Cu/Mo ratio of an animals diet is low, molybdenum toxicity is often evident among those animals. Ruminants are especially susceptible to copper deficiency and to an imbalance of copper, molybdenum, and sulfur. Subsequently, poultry, swine, and sheep are less likely than cattle to be poisoned by molybdenum. A Cu:Mo ratio of 2:1 will prevent poisoning. Molybdenosis is a disease which has been reported in ruminants in Colorado, Nevada, Oregon, California, Ireland, and England. This disease is linked with very high molybdenum levels and has symptoms of diarrhea, discoloration of hair, loss of appetite, joint abnormalities, osteoporosis, reproductive difficulties, lack of sexual activity, testicular degeneration, and occasional death in cattle and sheep. This condition can also be prevented and treated with copper supplements. For more information on molybdenum in livestock drinking water, please visit: <ul style="list-style-type: none"> ■ Water Quality for Wyoming Livestock & Wildlife
Nickel (Ni)	0.0038 mg/L	Acceptable	<= 1 mg/L***	This water is considered acceptable because it is less than the guideline of 1.0 mg/L. A Nickel level of 5.0 mg/L and greater has been shown to cause birth problems in rats that have been exposed to Nickel for several generations. For more information on livestock drinking water, please visit: <ul style="list-style-type: none"> ■ Well Educated - Suitability of Water for Livestock ■ NDSU: Livestock and Water (2008)
Zinc (Zn)	0.0085 mg/L	Acceptable	<= 25 mg/L***	<ul style="list-style-type: none"> ■ NSDU Extension - Livestock and Water Quality
4) Trace Elements Analysis				
Antimony (Sb)	0.0024 mg/L	No guideline		At this time, there is no livestock drinking water quality guideline for antimony because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit the following websites: <ul style="list-style-type: none"> ■ NSDU Extension - Livestock and Water Quality
				This water is considered acceptable because it is less than the guideline of 1 mg/L. Arsenic can be introduced to water by human activities such as mining but can also be present naturally. While there

Arsenic (As)	0.002 mg/L	Acceptable	<= 1 mg/L***	<p>is evidence that even very low levels of arsenic can be toxic to humans, there is not evidence that levels below 1 mg/L are toxic to livestock. For more information on arsenic in water, please go to the following website:</p> <ul style="list-style-type: none"> ▪ Water Quality Criteria for Arsenic
Beryllium (Be)	0.00047 mg/L	No guideline		<p>At this time, there is no livestock drinking water quality guideline for beryllium because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ NSDU Extension - Livestock and Water Quality
Cobalt (Co)	0.0005 mg/L	Acceptable	<= 1 mg/L***	<p>This water is considered acceptable because it is less than the guideline of 1.0 mg/L. However, Cobalt is an essential trace element and toxicity symptoms usually become evident when levels reach 10.0 mg/L. For more information on livestock drinking water, please review "Mineral Tolerance of Animals", 2nd Revised Edition 2005, National Research Council, or visit the following websites:</p> <ul style="list-style-type: none"> ▪ Well Educated - Suitability of Water for Livestock ▪ Water Quality for Agriculture
Fluoride (F)	1.9 mg/L	Acceptable	<= 2 mg/L***	<p>This water is considered acceptable because it is less than the guideline of 2.0 mg/L. However, mottling of teeth may occur if fluoride levels are at 2.0 mg/L. The concentration of fluoride in water should not exceed 1.0 mg/L if it is supplemented in livestock feed. Fluorosis can occur in livestock receiving high amounts of fluoride in their feed supplements, pastures, and/or drinking water. Dairy cattle tend to be the most sensitive livestock to fluoride toxicity. Dairy feed and mineral supplements may contain high levels of fluoride and therefore, cows may get more than their recommended daily dose of fluoride even before consuming water and forage. Most livestock is slaughtered prior to fluoride accumulation becoming a problem. Fluoride toxicity is reduced if the diet is high in calcium, sodium chloride, aluminum oxide, calcium carbonate, aluminum sulfate, aluminum chloride or aluminum acetate. The effects of fluoride on animals and people are essentially the same and are triggered at approximately the same fluoride levels. For more information on fluoride in livestock water, please visit:</p> <ul style="list-style-type: none"> ▪ Water Quality for Wyoming Livestock & Wildlife ▪ Well Educated - Suitability of Water for Livestock
Lead (Pb)	0.00010 mg/L	Acceptable	<= 0.1 mg/L***	<p>This water is considered acceptable because it is less than the guideline of 0.1 mg/L. Lead levels between 0.5 and 1.0 mg/L may cause chronic lead poisoning. Similar to people, lead increases in the tissues and blood of animals after reaching a saturation point in the bones, where it first accumulates. Factors that determine lead toxicity in livestock include species, age, general health and nutrition of animals, reproduction stage, form of lead, and rate of ingestion. Young livestock animals are more vulnerable to lead toxicity than adult animals. Furthermore, horses tend to be the most susceptible to lead poisoning. For more information on livestock drinking water please review "Mineral Tolerance of Animals", 2nd Revised Edition 2005, National Research Council, or visit:</p> <ul style="list-style-type: none"> ▪ Well Educated - Suitability of Water for Livestock ▪ Water Quality for Agriculture
Lithium (Li)	0.100 mg/L	No guideline		<p>At this time, there is no livestock drinking water quality guideline for lithium because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ NSDU Extension - Livestock and Water Quality
Mercury (Hg)	0.000031 mg/L	Acceptable	<= 0.001 mg/L**	<p>This water is considered acceptable because it is less than the guideline of 0.001 mg/L. Mercury is hazardous to both animals and humans. Mercury compounds have been used in some paints, drywall compounds, pharmaceuticals, and fungicides. Mercury can damage the nervous, reproductive, renal, and developmental systems of humans and animals. The chemical form of mercury and point of entry are important factors in the toxicity of mercury. Ingestion of inorganic mercury is mainly responsible for the deterioration of intestines and kidney damage in both animals and humans. Methyl mercury and short-chained organic mercury compounds kill cells in central nervous system which assist in sensory and coordination functions. For more information on livestock drinking water please review "Mineral</p>

				Tolerance of Animals", 2nd Revised Edition 2005, National Research Council.
Selenium (Se)	0.071 mg/L	Acceptable	<= 0.1 mg/L***	<p>This water is considered acceptable because it is less than the guideline of 0.1 mg/L. Selenium is a trace element, essential for animals and humans. The effects of selenium in water and food depend on the amount ingested and the length of exposure. Changes in respiratory, cardiovascular, gastrointestinal, musculoskeletal, renal, dermal, endocrine, and body weight have been documented in humans and animals exposed to selenium. Skin, nail, and hair damage are important symptoms of selenium toxicity. Signs of selenium poisoning in animals and humans include excessive salivation, shallow breathing, breath odor, and diarrhea. Other signs of acute selenium poisoning are vomiting, spasms, and death from respiratory failure. Selenium poisoning of animals has been documented in areas where soils have high selenium concentrations. Conversely, plants and animals cultivated in areas with low selenium concentrations have the potential to develop diseases as a result of selenium deficiency. Deficiency of selenium and vitamin E has been shown to cause degeneration of muscle tissue in sheep and cattle, diseases of the pores in chickens, and liver necrosis in swine and rats. In the absence of vitamin E deficiency, symptoms of selenium deficiency may include pancreatic deterioration in chicks, reduced growth, reproductive complications, vascular changes, and cataracts. For more information on selenium in livestock drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ Water Quality for Wyoming Livestock & Wildlife
Silver (Ag)	0.000045 mg/L	No guideline		<p>At this time, there is no livestock water quality guideline for Silver because no documented threshold of injury has been shown to occur. The majority of silver is excreted in the bile of the feces. The skin and mucous tissues absorb the silver which is not excreted. For more information on silver in livestock drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ NSDU Extension - Livestock and Water Quality
Thallium (Tl)	0.000066 mg/L	No guideline		<p>At this time, there is no livestock water quality guideline for Thallium because no documented threshold of injury has been shown to occur. For more information on livestock drinking water, please visit:</p> <ul style="list-style-type: none"> ▪ NSDU Extension - Livestock and Water Quality
Vanadium (V)	0.0016 mg/L	Acceptable	<= 0.01 mg/L***	<p>This water is considered acceptable because it is less than the guideline of 0.01 mg/L. For more information on livestock drinking water please review "Mineral Tolerance of Animals", 2nd Revised Edition 2005, National Research Council.</p>
7) Volatile Contaminants				
benzene	0.16 ug/L	No guideline		<p>At this time, there is no standard or guideline for benzene. For information on the EPA's list of drinking water contaminants and MCLs, please visit:</p> <ul style="list-style-type: none"> ▪ EPA: Drinking Water Contaminants
o-dichlorobenzene	0.15 ug/L	No guideline		<p>At this time, there is no standard or guideline for o-dichlorobenzene. For information on the EPA's list of drinking water contaminants and MCLs, please visit:</p> <ul style="list-style-type: none"> ▪ EPA: Drinking Water Contaminants
p-dichlorobenzene	0.16 ug/L	No guideline		<p>At this time, there is no standard or guideline for p-dichlorobenzene. For information on the EPA's list of drinking water contaminants and MCLs, please visit:</p> <ul style="list-style-type: none"> ▪ EPA: Drinking Water Contaminants
ethylbenzene	0.16 ug/L	No guideline		<p>At this time, there is no standard or guideline for ethylbenzene. For more information on EPA's list of drinking water contaminants and MCLs, please visit:</p> <ul style="list-style-type: none"> ▪ EPA: Consumer Factsheet on ETHYLBENZENE
monochlorobenzene	0.17 ug/L	No guideline		<p>At this time, there is no standard or guideline for monochlorobenzene. For information on the EPA's list of drinking water contaminants and MCLs, please visit:</p> <ul style="list-style-type: none"> ▪ EPA: Drinking Water Contaminants

styrene	0.17 ug/L	No guideline	At this time, there is no standard or guideline for styrene. For information on the EPA's list of drinking water contaminants and MCLs, please visit: ▪ EPA: Drinking Water Contaminants
toluene	0.17 ug/L	No guideline	At this time, there is no standard or guideline for toluene. For information on the EPA's list of drinking water contaminants and MCLs, please visit: ▪ EPA: Drinking Water Contaminants
trichloroethane	0.27 ug/L	No guideline	At this time, there is no standard or guideline for trichloroethane. For information on the EPA's list of drinking water contaminants and MCLs, please visit: ▪ EPA: Drinking Water Contaminants
xylene (total)	0.19 ug/L	No guideline	At this time, there is no standard or guideline for xylenes total. For information on the EPA's list of drinking water contaminants and MCLs, please visit: ▪ EPA: Drinking Water Contaminants

* MCL (Primary Standard)

** SMCL (Secondary Standard)

*** Upper Limit Guideline

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