

ANALYSIS OF INJECTION ZONE WATER

Tuesday, April 28, 2015

Elaine Porter
Tetra Tech
4900 Pearl East Circle, Suite 300W
Boulder, CO 80301-6118

Re: ALS Workorder: 1504297
Project Name: Windy Hill
Project Number:

Dear Porter:

Two water samples were received from Tetra Tech, on 4/16/2015. The samples were scheduled for the following analysis:


Inorganics

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,


ALS Environmental
Amy R. Wolf
Project Manager

ARW/mmj
Enclosure(s):

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New Jersey (NJ)	CO003
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1504297

Inorganics:

The samples were analyzed following MCAWW procedures for the current revision of the following SOP and method:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
TDS	160.1	1101

All acceptance criteria were met.

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Sample Number(s) Cross-Reference Table

OrderNum: 1504297

Client Name: Tetra Tech

Client Project Name: Windy Hill

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
FW-3-18WSW-01 (Dakota J-4 Sa	1504297-1		WATER	15-Apr-15	9:00
FW-3-18WSW-02 (Dakota J-4 Sa	1504297-2		WATER	15-Apr-15	9:00



Chain-of-Custody

Time Zone (Crew): EST CBT MST PST Mantic. O = out D = out NO = not-out JMS W = work L = layup E = ended F = fair

For remarks or arrivals, please detail analysis below.

Comments:	NO PACKAGE (same team)
	LEVEL 1 (Standard GT)
	LEVEL 10 (Mid GC + Team)
	LEVEL 14 (Mid GC + Team + Team Skill)
Repetitive Key: 1-423 2-4403 3-12804 4-4424 5-441804 T-Other 6-4 degrees C 7-6035	



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Tetra Tech

Workorder No: 1504297

Project Manager: AW

Initials: CDJ Date: 4-16-15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="radio"/> NONE	YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	<input checked="" type="radio"/> DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	<input checked="" type="radio"/> N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	<input checked="" type="radio"/> N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>7.0 @</u>			
No. of custody seals on cooler: <u>0</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>NA</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO <input checked="" type="radio"/> NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

@ proceed with analysis per email from Nikki dated 4/17/15.
aw 4/17/15

If applicable, was the client contacted? ☒ YES / NO / NA Contact: Nikki Scheinost Date/Time: 4/16/15

Project Manager Signature / Date: [Signature] 4/16/15

Client:	Tetra Tech	Date:	28-Apr-15
Project:	Windy Hill	Work Order:	1504297
Sample ID:	FW-3-18WSW-01 (Dakota J-4 Sandstone)	Lab ID:	1504297-1
Legal Location:		Matrix:	WATER
Collection Date:	4/15/2015 09:00	Percent Moisture:	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids			EPA160.1		Prep Date: 4/17/2015	PrepBy: AJD
TOTAL DISSOLVED SOLIDS	6600		200	MG/L	1	4/20/2015

Client: Tetra Tech
Project: Windy Hill
Sample ID: FW-3-18WSW-02 (Dakota J-4 Sandstone)
Legal Location:
Collection Date: 4/15/2015 09:00

Date: 28-Apr-15
Work Order: 1504297
Lab ID: 1504297-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids			EPA160.1		Prep Date: 4/17/2015	PrepBy: AJD
TOTAL DISSOLVED SOLIDS	6600		200	MG/L	1	4/20/2015

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.
 Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
 Y2 - Chemical Yield outside default limits.
 W - DER is greater than Warning Limit of 1.42
 * - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
 # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
 G - Sample density differs by more than 15% of LCS density.
 D - DER is greater than Control Limit
 M - Requested MDC not met.
 LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
 L - LCS Recovery below lower control limit.
 H - LCS Recovery above upper control limit.
 P - LCS, Matrix Spike Recovery within control limits.
 N - Matrix Spike Recovery outside control limits
 NC - Not Calculated for duplicate results less than 5 times MDC
 B - Analyte concentration greater than MDC.
 B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
 U or ND - Indicates that the compound was analyzed for but not detected.
 E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 M - Duplicate injection precision was not met.
 N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
 * - Duplicate analysis (relative percent difference) not within control limits.
 S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
 B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
 E - Analyte concentration exceeds the upper level of the calibration range.
 J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
 A - A tentatively identified compound is a suspected aldol-condensation product.
 X - The analyte was diluted below an accurate quantitation level.
 * - The spike recovery is equal to or outside the control criteria used.
 + - The relative percent difference (RPD) equals or exceeds the control criteria.
 G - A pattern resembling gasoline was detected in this sample.
 D - A pattern resembling diesel was detected in this sample.
 M - A pattern resembling motor oil was detected in this sample.
 C - A pattern resembling crude oil was detected in this sample.
 4 - A pattern resembling JP-4 was detected in this sample.
 5 - A pattern resembling JP-5 was detected in this sample.
 H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
 L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
 Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
 - gasoline
 - JP-8
 - diesel
 - mineral spirits
 - motor oil
 - Stoddard solvent
 - bunker C

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Date: 4/28/2015 10:21

Client: Tetra Tech

Work Order: 1504297

Project: Windy Hill

QC BATCH REPORT

Batch ID: TD150417-1-1

Instrument ID: Balance

Method: EPA160.1

LCS		Sample ID: TD150417-1			Units: MG/L		Analysis Date: 4/20/2015					
Client ID:		Run ID: TD150420-1A1			Prep Date: 4/17/2015		DF: 1					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual	
TOTAL DISSOLVED SOLIDS	409	20	400		102	85-115				5		

MB		Sample ID: TD150417-1			Units: MG/L		Analysis Date: 4/20/2015					
Client ID:		Run ID: TD150420-1A1			Prep Date: 4/17/2015		DF: 1					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual	
TOTAL DISSOLVED SOLIDS	ND	20										

The following samples were analyzed in this batch:

1504297-1	1504297-2
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