

## **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:

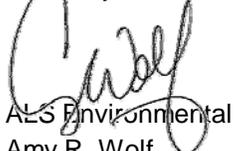
Inorganics

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.

# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1504297

**Client Name:** Tetra Tech

**Client Project Name:** Windy Hill

**Client Project Number:**

**Client PO Number:**

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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



**ALS Laboratory Group**  
 228 Commerce Drive, Fort Collins, Colorado 80524  
 Tel: (970) 223-4411 Fax: (970) 223-1111 PC: (970) 223-1022

**Chain-of-Custody**

Form 1000

PROJECT NAME	WINDY HILLS	SAMPLER	JEFF DREYER	DATE	4/15/12	WORKORDER	1504297
PROJECT NO.	14-91038	SITE ID	WINDY HILLS NB	TURNAROUND		PAGE	1 of 1
COMPANY NAME	FORTR Tech	SDS FORMAT				DISPOSAL	By Lab or Return to Client
SEND REPORT TO	ELNIK ROZIER	PURCHASE ORDER					
ADDRESS		CALL TO COMPANY	FORTR Tech - SOUT COLLS				
CITY / STATE / ZIP		ADDRESS					
PHONE		CITY / STATE / ZIP					
FAX		PHONE					
E-MAIL	ELNIK.ROZIER@FORTR.com	FAX					
		E-MAIL					
Lab ID	Field ID	Matrix	Sample Date	Sample Time	#	Pres. QC	
①	(Dakota J4 Sandstone)	W	4/15/12	9:00	1	-	X
②	(Dakota J4 Sandstone)	W	4/15/12	9:00	1	-	X

\*Time Zone (C=Chy) EST CBT MST PST Mink. O=rd S=sd ND =non-sd test W=week L=logic E=envd F=fer  
 For metals or anions, please detail analysis below.

Comments:

5 of 9

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-HClO4 5-H2O2 6-H2O2 7-Other 8-4 reagent C 9-035

RECEIVED BY	JEFF DREYER	DATE	4/16/12	TIME	9:30
RECEIVED BY	Ann Peterson	DATE	4/16/12	TIME	09:30
RECEIVED BY		DATE		TIME	
RECEIVED BY		DATE		TIME	
RECEIVED BY		DATE		TIME	



**ALS Environmental - Fort Collins**  
**CONDITION OF SAMPLE UPON RECEIPT FORM**

Client: Tetra Tech  
Project Manager: AW

Workorder No: 1504297  
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> <input checked="" type="radio"/>			
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 email

**Client:** Tetra Tech  
**Project:** Windy Hill  
**Sample ID:** FW-3-18WSW-01 (Dakota J-4 Sandstone)  
**Legal Location:**  
**Collection Date:** 4/15/2015 09:00

**Date:** 28-Apr-15  
**Work Order:** 1504297  
**Lab ID:** 1504297-1  
**Matrix:** WATER  
**Percent Moisture:**

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

**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

Client: Tetra Tech

**QC BATCH REPORT**

Work Order: 1504297

Project: Windy Hill

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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