



Tuesday, December 29, 2020

Max Trehus
Great Western Operating Company, LLC
4093 Specialty Place, Unit B
Longmont, CO 80504

Re: ALS Workorder: 2012337
Project Name: Postle IC 09-342HNX
Project Number:

Dear Mr. Trehus:

Two water samples were received from Great Western Operating Company, LLC, on 12/16/2020. The samples were scheduled for the following analyses:

Dissolved Gasses

GC/MS Volatiles

Inorganics

Metals

Total Extractable Petroleum Hydrocarbons (Diesel)

Total Volatile Petroleum Hydrocarbons (Gasoline)

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. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental.

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

Sincerely,

ALS Environmental
Katie M. OBrien
Project Manager

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)	17-003
Arizona (AZ)	AZ0742
California (CA)	2926
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO010992018-1
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	TN02976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



2012337

GC/MS Volatiles:

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C.

All surrogate recoveries were within acceptance criteria with the following exception:

Surrogate	Sample	Direction
Dibromofluoromethane	-1	Low

The low surrogate recovery is due to the high pH of the sample. No further action was taken.

All remaining acceptance criteria were met.

Dissolved Gasses:

The sample was prepared and analyzed according to method RSK-175 procedures and the current revision of SOP 449.

All acceptance criteria were met.

GRO:

The sample was analyzed following the current revision of SOP 425 generally based on SW-846 Methods 8000C and 8015D. TVPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C6 to C10.

All acceptance criteria were met.

DRO:

The sample was analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All acceptance criteria were met.

**Metals:**

The samples were analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures. Analysis by Trace ICP followed method 200.7 and the current revision of SOP 834.

Sample 2012337-2 was filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.

All acceptance criteria were met.

Inorganics:

The sample was analyzed following EMSL and Standard Method procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
TDS	SM2540C	1101
Chloride	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 2012337

Client Name: Great Western Operating Company, LLC

Client Project Name: Postle IC 09-342HNX

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
09-342HNX A through E, G	2012337-1		WATER	15-Dec-20	9:20
09-342HNX F	2012337-2		WATER	15-Dec-20	9:20



ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Turnaround time for samples received after 2 p.m. will be calculated beginning from the next business day.
Turnaround time for samples received Saturday will be calculated beginning from the next business day.

ALS WORKORDER #
2012337

TURNAROUND TIME		SAMPLER		PAGE		of	
PROJECT NAME	PROJECT No.			SITE ID		EDD FORMAT	
COMPANY NAME		SEND REPORT TO		ADDRESS		CITY / STATE / ZIP	
PHONE		FAX		E-MAIL			
LAB ID		FIELD ID		MATRIX		SAMPLE DATE	
1		09-342HNX A		W		12/15/20	
1		09-342HNX B		I		09-20	
1		09-342HNX C		I		09-20	
1		09-342HNX D		I		09-20	
1		09-342HNX E		I		09-20	
1		09-342HNX F		I		09-20	
1		09-342HNX G		I		09-20	
1		09-342HNX H		I		09-20	
1		09-342HNX I		I		09-20	
1		09-342HNX J		I		09-20	
1		09-342HNX K		I		09-20	
1		09-342HNX L		I		09-20	
1		09-342HNX M		I		09-20	
1		09-342HNX N		I		09-20	
1		09-342HNX O		I		09-20	
1		09-342HNX P		I		09-20	
1		09-342HNX Q		I		09-20	
1		09-342HNX R		I		09-20	
1		09-342HNX S		I		09-20	
1		09-342HNX T		I		09-20	
1		09-342HNX U		I		09-20	
1		09-342HNX V		I		09-20	
1		09-342HNX W		I		09-20	
1		09-342HNX X		I		09-20	
1		09-342HNX Y		I		09-20	
1		09-342HNX Z		I		09-20	
1		09-342HNX AA		I		09-20	
1		09-342HNX AB		I		09-20	
1		09-342HNX AC		I		09-20	
1		09-342HNX AD		I		09-20	
1		09-342HNX AE		I		09-20	
1		09-342HNX AF		I		09-20	
1		09-342HNX AG		I		09-20	
1		09-342HNX AH		I		09-20	
1		09-342HNX AI		I		09-20	
1		09-342HNX AJ		I		09-20	
1		09-342HNX AK		I		09-20	
1		09-342HNX AL		I		09-20	
1		09-342HNX AM		I		09-20	
1		09-342HNX AN		I		09-20	
1		09-342HNX AO		I		09-20	
1		09-342HNX AP		I		09-20	
1		09-342HNX AQ		I		09-20	
1		09-342HNX AR		I		09-20	
1		09-342HNX AS		I		09-20	
1		09-342HNX AT		I		09-20	
1		09-342HNX AU		I		09-20	
1		09-342HNX AV		I		09-20	
1		09-342HNX AW		I		09-20	
1		09-342HNX AX		I		09-20	
1		09-342HNX AY		I		09-20	
1		09-342HNX AZ		I		09-20	
1		09-342HNX BA		I		09-20	
1		09-342HNX BB		I		09-20	
1		09-342HNX BC		I		09-20	
1		09-342HNX BD		I		09-20	
1		09-342HNX BE		I		09-20	
1		09-342HNX BF		I		09-20	
1		09-342HNX BG		I		09-20	
1		09-342HNX BH		I		09-20	
1		09-342HNX BI		I		09-20	
1		09-342HNX BJ		I		09-20	
1		09-342HNX BK		I		09-20	
1		09-342HNX BL		I		09-20	
1		09-342HNX BM		I		09-20	
1		09-342HNX BN		I		09-20	
1		09-342HNX BO		I		09-20	
1		09-342HNX BP		I		09-20	
1		09-342HNX BQ		I		09-20	
1		09-342HNX BR		I		09-20	
1		09-342HNX BS		I		09-20	
1		09-342HNX BT		I		09-20	
1		09-342HNX BU		I		09-20	
1		09-342HNX BV		I		09-20	
1		09-342HNX BW		I		09-20	
1		09-342HNX BX		I		09-20	
1		09-342HNX BY		I		09-20	
1		09-342HNX BZ		I		09-20	
1		09-342HNX CA		I		09-20	
1		09-342HNX CB		I		09-20	
1		09-342HNX CC		I		09-20	
1		09-342HNX CD		I		09-20	
1		09-342HNX CE		I		09-20	
1		09-342HNX CF		I		09-20	
1		09-342HNX CG		I		09-20	
1		09-342HNX CH		I		09-20	
1		09-342HNX CI		I		09-20	
1		09-342HNX CJ		I		09-20	
1		09-342HNX CK		I		09-20	
1		09-342HNX CL		I		09-20	
1		09-342HNX CM		I		09-20	
1		09-342HNX CN		I		09-20	
1		09-342HNX CO		I		09-20	
1		09-342HNX CP		I		09-20	
1		09-342HNX CQ		I		09-20	
1		09-342HNX CR		I		09-20	
1		09-342HNX CS		I		09-20	
1		09-342HNX CT		I		09-20	
1		09-342HNX CU		I		09-20	
1		09-342HNX CV		I		09-20	
1		09-342HNX CW		I		09-20	
1		09-342HNX CX		I		09-20	
1		09-342HNX CY		I		09-20	
1		09-342HNX CZ		I		09-20	
1		09-342HNX DA		I		09-20	
1		09-342HNX DB		I		09-20	
1		09-342HNX DC		I		09-20	
1		09-342HNX DD		I		09-20	
1		09-342HNX DE		I		09-20	
1		09-342HNX DF		I		09-20	
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1		09-342HNX DH		I		09-20	
1		09-342HNX DI		I		09-20	
1		09-342HNX DJ		I		09-20	
1		09-342HNX DK		I		09-20	
1		09-342HNX DL		I		09-20	
1		09-342HNX DM		I		09-20	
1		09-342HNX DN		I		09-20	
1		09-342HNX DO		I		09-20	
1		09-342HNX DP		I		09-20	
1		09-342HNX DQ		I		09-20	
1		09-342HNX DR		I		09-20	
1		09-342HNX DS		I		09-20	
1		09-342HNX DT		I		09-20	
1		09-342HNX DU		I		09-20	
1		09-342HNX DV		I		09-20	
1		09-342HNX DW		I		09-20	
1		09-342HNX DX		I		09-20	
1		09-342HNX DY		I		09-20	
1		09-342HNX DZ		I		09-20	
1		09-342HNX EA		I		09-20	
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1		09-342HNX EI		I		09-20	
1		09-342HNX EJ		I		09-20	
1		09-342HNX EK		I		09-20	
1		09-342HNX EL		I		09-20	
1		09-342HNX EM		I		09-20	
1		09-342HNX EN		I		09-20	
1		09-342HNX EO		I		09-20	
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1		09-342HNX ER		I		09-20	
1		09-342HNX ES		I		09-20	
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1		09-342HNX EX		I		09-20	
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1		09-342HNX EZ		I		09-20	
1		09-342HNX FA		I		09-20	
1		09-342HNX FB		I		09-20	
1		09-342HNX FC		I		09-20	
1		09-342HNX FD		I		09-20	
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1		09-342HNX FI		I		09-20	
1		09-342HNX FJ		I		09-20	
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1		09-342HNX FS		I		09-20	
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1		09-342HNX FV		I		09-20	
1		09-342HNX FW		I		09-20	
1		09-342HNX FX		I		09-20	
1		09-342HNX FY		I		09-20	
1		09-342HNX FZ		I		09-20	
1		09-342HNX GA		I		09-20	
1		09-342HNX GB		I		09-20	
1		09-342HNX GC		I		09-20	
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1		09-342HNX GE		I		09-20	
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1		09-342HNX GI		I		09-20	
1		09-342HNX GJ		I		09-20	
1		09-342HNX GK		I		09-20	
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1		09-342HNX GN		I		09-20	
1		09-342HNX GO		I		09-20	
1		09-342HNX GP		I		09-20	
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1		09-342HNX GW		I		09-20	
1		09-342HNX GX		I		09-20	
1		09-342HNX GY		I		09-20	
1		09-342HNX GZ		I		09-20	
1		09-342HNX HA		I		09-20	
1		09-342HNX HB		I		09-20	
1		09-342HNX HC		I		09-20	
1		09-342HNX HD		I		09-20	
1		09-342HNX HE		I		09-20	
1		09-342HNX HF		I		09-20	
1		09-342HNX HG		I		09-20	
1		09-342HNX HH		I		09-20	
1		09-342HNX HI		I		09-20	
1		09-342HNX HJ		I		09-20	
1		09-342HNX HK		I		09-20	
1		09-342HNX HL		I		09-20	
1		09-342HNX HM		I		09-20	
1		09-342HNX HN		I		09-20	
1		09-342HNX HO		I		09-20	
1		09-342HNX HP		I		09-20	
1		09-342HNX HQ		I		09-20	
1		09-342HNX HR		I		09-20	
1		09-342HNX HS		I		09-20	
1		09-342HNX HT		I		09-2	



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client Name/ID: Great Western

Workorder No: 2012337

Project Manager: KMO

Initials: RGA

Date: 12/16/2020

1. Are airbills / shipping documents present and/or removable?	<input checked="" type="checkbox"/> Drop Off	<input type="checkbox"/> YES	<input type="checkbox"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="checkbox"/> NONE	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
3. Are custody seals on sample containers intact?	<input checked="" type="checkbox"/> NONE	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
4. Is there a COC (chain-of-custody) present?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
6. Are short-hold samples present?	<input type="checkbox"/>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
7. Are all samples within holding times for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
8. Were all sample containers received intact? (not broken or leaking)	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
9. Is there sufficient sample for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
10. Are samples in proper containers for requested analyses? (form 250, Sample Handling Guidelines)	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
11. Are all aqueous samples preserved correctly, if required?	<input type="checkbox"/> N/A	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO*
12. Were unpreserved samples pH checked, if required?	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> YES	<input type="checkbox"/> NO
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm in diameter?	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
14. Were the samples shipped on ice?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO
15. Were cooler temperatures measured at 0.1 - 6.0°C?	IR gun used: <input type="checkbox"/> #3 <input checked="" type="checkbox"/> #5	<input type="checkbox"/> Rad Only	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

Cooler #: 1

Temperature (°C): 5.9

of custody seals on cooler: 0

External mR/hr reading: -

Background mR/hr reading: 10

Were external mR/hr readings ≤ two times background and within DOT acceptance criteria? (If no, see Form 008)

☒ N/A ☐ YES ☐ NO

* Please provide details below for 'NO' responses in gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

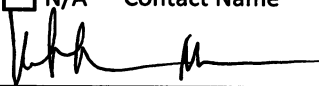
11) Sample 2012337-1-14 had a pH of 14, 0.5 mL of HNO₃ was added, no change in pH was observed

All client bottle ID's vs ALS lab ID's double-checked by: RGA

If applicable, was the client contacted? ☐ YES ☐ N/A Contact Name

Date:

Project Manager Signature / Date:

 12/17/20

ALS -- Fort Collins

SAMPLE SUMMARY REPORT

Client: Great Western Operating Company, LLC

Date: 29-Dec-20

Project: Postle IC 09-342HNX

Work Order: 2012337

Sample ID: 09-342HNX A through E, G

Lab ID: 2012337-1

Legal Location:

Matrix: WATER

Collection Date: 12/15/2020 09:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate			SM2320B		Prep Date: 12/22/2020	PrepBy: KJS
BICARBONATE AS CaCO3	ND		500	MG/L	1	12/22/2020
CARBONATE AS CaCO3	1400		500	MG/L	1	12/22/2020
TOTAL ALKALINITY AS CaCO3	11000		500	MG/L	1	12/22/2020
Diesel Range Organics			SW8015M		Prep Date: 12/23/2020	PrepBy: ASZ
Diesel Range Organics	2.2		1	MG/L	1	12/23/2020 23:21
Surr: O-TERPHENYL	101		69-120	%REC	1	12/23/2020 23:21
Dissolved Gasses			RSK175		Prep Date: 12/21/2020	PrepBy: ASZ
METHANE	5200		3	UG/L	3	12/21/2020 10:50
ETHANE	1700		6	UG/L	3	12/21/2020 10:50
PROPANE	670		3	UG/L	3	12/21/2020 10:50
Gasoline Range Organics			SW8015		Prep Date: 12/22/2020	PrepBy: ASZ
GASOLINE RANGE ORGANICS	6.1		5	MG/L	50	12/22/2020 13:34
Surr: 2,3,4-TRIFLUOROTOLUENE	108		80-120	%REC	50	12/22/2020 13:34
GC/MS Volatiles			SW8260_25		Prep Date: 12/21/2020	PrepBy: AEW
BENZENE	92		10	UG/L	10	12/21/2020 19:35
TOLUENE	190		10	UG/L	10	12/21/2020 19:35
ETHYLBENZENE	290		10	UG/L	10	12/21/2020 19:35
M+P-XYLENE	980		10	UG/L	10	12/21/2020 19:35
O-XYLENE	340		10	UG/L	10	12/21/2020 19:35
TOTAL XYLENES	1300		1	UG/L	1	12/21/2020 19:35
Surr: 4-BROMOFLUOROBENZENE	100		80-120	%REC	10	12/21/2020 19:35
Surr: DIBROMOFLUOROMETHANE	55	*	80-120	%REC	10	12/21/2020 19:35
Surr: TOLUENE-D8	99		80-120	%REC	10	12/21/2020 19:35
Ion Chromatography			EPA300.0		Prep Date: 12/18/2020	PrepBy: KJS
CHLORIDE	1700		20	MG/L	100	12/22/2020 09:13
SULFATE	820		50	MG/L	50	12/22/2020 09:00
Total Recoverable Metals by 200.7			EPA200.7		Prep Date: 12/22/2020	PrepBy: TXS
CALCIUM	89		10	MG/L	10	12/23/2020 12:06
POTASSIUM	5500		100	MG/L	100	12/23/2020 12:30
MAGNESIUM	ND		10	MG/L	10	12/23/2020 12:06
SODIUM	2400		100	MG/L	100	12/23/2020 12:30
Total Dissolved Solids			SM2540C		Prep Date: 12/21/2020	PrepBy: LMC
TOTAL DISSOLVED SOLIDS	8500		1000	MG/L	1	12/28/2020

Client: Great Western Operating Company, LLC

Date: 29-Dec-20

Project: Postle IC 09-342HNX

Work Order: 2012337

Sample ID: 09-342HNX F

Lab ID: 2012337-2

Legal Location:

Matrix: WATER

Collection Date: 12/15/2020 09:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Dissolved Metals by 200.7**EPA200.7**

Prep Date: 12/22/2020

PrepBy: TXS

CALCIUM	90		10	MG/L	10	12/23/2020 12:07
POTASSIUM	5600		100	MG/L	100	12/23/2020 12:33
MAGNESIUM	ND		10	MG/L	10	12/23/2020 12:07
SODIUM	2500		100	MG/L	100	12/23/2020 12:33

Client: Great Western Operating Company, LLC
Project: Postle IC 09-342HNX
Sample ID: 09-342HNX F
Legal Location:
Collection Date: 12/15/2020 09:20

Date: 29-Dec-20
Work Order: 2012337
Lab ID: 2012337-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC	M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
U or ND - Result is less than the sample specific MDC.	L - LCS Recovery below lower control limit.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.	H - LCS Recovery above upper control limit.
Y2 - Chemical Yield outside default limits.	P - LCS, Matrix Spike Recovery within control limits.
W - DER is greater than Warning Limit of 1.42	N - Matrix Spike Recovery outside control limits
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.	NC - Not Calculated for duplicate results less than 5 times MDC
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.	B - Analyte concentration greater than MDC.
G - Sample density differs by more than 15% of LCS density.	B3 - Analyte concentration greater than MDC but less than Requested MDC.
D - DER is greater than Control Limit	
M - Requested MDC not met.	

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

ALS -- Fort Collins

Date: 12/29/2020 3:09

Client: Great Western Operating Company, LLC

Work Order: 2012337

Project: Postle IC 09-342HNX

QC BATCH REPORT

Batch ID: HC201221-91-1 Instrument ID MEE-1 Method: RSK175

LCS Sample ID: HC201221-91 Units: UG/L Analysis Date: 12/21/2020 07:37

Client ID: Run ID: HC201221-91D Prep Date: 12/21/2020 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	142	1	142		100	76-125				25	
ETHANE	250	2	267		94	70-120				25	
PROPANE	369	1	391		94	72-120				25	

LCSD Sample ID: HC201221-91 Units: UG/L Analysis Date: 12/21/2020 09:20

Client ID: Run ID: HC201221-91D Prep Date: 12/21/2020 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	142	1	142		100	76-125		142	0	25	
ETHANE	253	2	267		95	70-120		250	1	25	
PROPANE	315	1	391		80	72-120		369	16	25	

MB Sample ID: HC201221-91 Units: UG/L Analysis Date: 12/21/2020 08:00

Client ID: Run ID: HC201221-91D Prep Date: 12/21/2020 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	ND	1									
ETHANE	ND	2									
PROPANE	ND	1									

The following samples were analyzed in this batch: 2012337-1

Client: Great Western Operating Company, LLC
Work Order: 2012337
Project: Postle IC 09-342HXX

QC BATCH REPORT

Batch ID: **HC201222-61-1** Instrument ID **FUELS-1** Method: **SW8015**

LCS	Sample ID: HC201222-61				Units: MG/L		Analysis Date: 12/22/2020 07:54				
Client ID:		Run ID: HC201222-61A				Prep Date: 12/22/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.52	0.1	0.5		104	80-120				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.105		0.1		105	80-120					

LCSD	Sample ID: HC201222-61				Units: MG/L		Analysis Date: 12/22/2020 12:23				
Client ID:	Run ID: HC201222-61A				Prep Date: 12/22/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.469	0.1	0.5		94	80-120		0.52	10	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.11		0.1		110	80-120			5		

MB		Sample ID: HC201222-61			Units: MG/L		Analysis Date: 12/22/2020 08:18		
Client ID:		Run ID: HC201222-61A			Prep Date: 12/22/2020			DF: 1	
Analyte		Result	ReportLimit		Qual				
GASOLINE RANGE ORGANICS		ND	0.1						
Surr: 2,3,4-TRIFLUOROTOLUENE		0.102			102	80-120			

The following samples were analyzed in this batch:

2012337-1

Client: Great Western Operating Company, LLC
Work Order: 2012337
Project: Postle IC 09-342HNX

QC BATCH REPORT

Batch ID: **HC201223-82-1** Instrument ID **FUELS-1** Method: **SW8015M**

LCS	Sample ID: HC201223-82				Units: MG/L		Analysis Date: 12/23/2020 21:36				
Client ID:		Run ID: HC201223-81A				Prep Date: 12/23/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	7.16	1.07	8.33		86	53-120				20	
Surr: O-TERPHENYL	1.68		1.67		101	69-120					

LCSD	Sample ID: HC201223-82				Units: MG/L	Analysis Date: 12/23/2020 21:57					
Client ID:		Run ID: HC201223-81A				Prep Date: 12/23/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	7.2	1.07	8.33		86	53-120		7.16	1	20	
Surr: O-TERPHENYL	1.73		1.67		104	69-120			3		

MB		Sample ID: HC201223-82		Units: MG/L		Analysis Date: 12/23/2020 21:15	
Client ID:		Run ID: HC201223-81A		Prep Date: 12/23/2020		DF: 1	
Analyte		Result	ReportLimit				
Diesel Range Organics		ND	1.1				
Surr: O-TERPHENYL		1.64		98	69-120		

The following samples were analyzed in this batch:

2012337-1

Client: Great Western Operating Company, LLC
Work Order: 2012337
Project: Postle IC 09-342HNX

QC BATCH REPORT

Batch ID: **IP201222-4-2** Instrument ID **ICPTTrace2** Method: **EPA200.7**

LCS	Sample ID: IP201222-4			Units: MG/L			Analysis Date: 12/23/2020 11:55				
Client ID:		Run ID: IT201223-1A2			Prep Date: 12/22/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	36.8	1	40		92	85-115				20	
MAGNESIUM	36.8	1	40		92	85-115				20	
POTASSIUM	41.1	1	40		103	85-115				20	
SODIUM	38.6	1	40		96	85-115				20	

LCSD	Sample ID: IP201222-4			Units: MG/L			Analysis Date: 12/23/2020 11:56				
Client ID:	Run ID: IT201223-1A2			Prep Date: 12/22/2020			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	36.4	1	40		91	85-115		36.8	1	20	
MAGNESIUM	36.4	1	40		91	85-115		36.8	1	20	
POTASSIUM	40.8	1	40		102	85-115		41.1	1	20	
SODIUM	38.4	1	40		96	85-115		38.6	1	20	

MB		Sample ID: FP201218-4		Units: MG/L		Analysis Date: 12/23/2020 11:53	
Client ID:		Run ID: IT201223-1A2		Prep Date: 12/22/2020		DF: 1	
Analyte		Result	ReportLimit	Qual			
CALCIUM		ND	1				
MAGNESIUM		ND	1				
POTASSIUM		ND	1				
SODIUM		ND	1				

MB		Sample ID: IP201222-4		Units: MG/L		Analysis Date: 12/23/2020 11:54	
Client ID:		Run ID: IT201223-1A2		Prep Date: 12/22/2020		DF: 1	
Analyte	Result	ReportLimit					Qual
CALCIUM	ND	1					
MAGNESIUM	ND	1					
POTASSIUM	ND	1					
SODIUM	ND	1					

The following samples were analyzed in this batch:

2012337-1 2012337-2

Client: Great Western Operating Company, LLC
 Work Order: 2012337
 Project: Postle IC 09-342HNX

QC BATCH REPORT

Batch ID: VL201221-3-1 Instrument ID HPV3 Method: SW8260_25

LCS		Sample ID: VL201221-3			Units: %REC		Analysis Date: 12/21/2020 12:22				
Client ID:		Run ID: VL201221-3A				Prep Date: 12/21/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	24.6		25		98	80-120					
Surr: DIBROMOFLUOROMETHANE	25.7		25		103	80-120					
Surr: TOLUENE-D8	25		25		100	80-120					
BENZENE	10.3	1	10		103	80-120				20	
TOLUENE	9.8	1	10		98	80-120				20	
ETHYLBENZENE	10.7	1	10		107	80-120				20	
M+P-XYLENE	20.6	1	20		103	80-120				20	
O-XYLENE	10.2	1	10		102	80-120				20	

LCSD		Sample ID: VL201221-3			Units: %REC		Analysis Date: 12/21/2020 12:42				
Client ID:		Run ID: VL201221-3A			Prep Date: 12/21/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	25		25		100	80-120			2		
Surr: DIBROMOFLUOROMETHANE	26.4		25		105	80-120			2		
Surr: TOLUENE-D8	24.4		25		97	80-120			2		
BENZENE	10.9	1	10		109	80-120		10.3	5	20	
TOLUENE	10.2	1	10		102	80-120		9.8	4	20	
ETHYLBENZENE	10.8	1	10		108	80-120		10.7	2	20	
M+P-XYLENE	21.1	1	20		106	80-120		20.6	3	20	
O-XYLENE	10.5	1	10		105	80-120		10.2	3	20	

MB		Sample ID: VL201221-3		Units: %REC		Analysis Date: 12/21/2020 13:45	
Client ID:		Run ID: VL201221-3A		Prep Date: 12/21/2020		DF: 1	
Analyte		Result	ReportLimit			Qual	
Surr: 4-BROMOFLUOROBENZENE		24.6		98	80-120		
Surr: DIBROMOFLUOROMETHANE		25.6		103	80-120		
Surr: TOLUENE-D8		24.7		99	80-120		
BENZENE		ND	1				
TOLUENE		ND	1				
ETHYLBENZENE		ND	1				
M+P-XYLENE		ND	1				
O-XYLENE		ND	1				
TOTAL XYLENES		ND	1				

The following samples were analyzed in this batch:

2012337-1

Client: Great Western Operating Company, LLC
Work Order: 2012337
Project: Postle IC 09-342HNX

QC BATCH REPORT

Batch ID: **AK201222-1-1** Instrument ID **NONE** Method: **SM2320B**

LCS		Sample ID: AK201222-1				Units: MG/L		Analysis Date: 12/22/2020			
Client ID:		Run ID: AK201222-1a1				Prep Date: 12/22/2020		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	96.5	5	100		96	85-115				15	

LCSD	Sample ID: AK201222-1				Units: MG/L		Analysis Date: 12/22/2020				
Client ID:	Run ID: AK201222-1a1				Prep Date: 12/22/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	96.7	5	100		97	85-115		96.5	0	15	

MB		Sample ID: AK201222-1		Units: MG/L		Analysis Date: 12/22/2020	
Client ID:		Run ID: AK201222-1a1		Prep Date: 12/22/2020		DF: 1	
Analyte		Result	ReportLimit	Qual			
BICARBONATE AS CaCO3		ND	5				
CARBONATE AS CaCO3		ND	5				
TOTAL ALKALINITY AS CaCO3		ND	5				

The following samples were analyzed in this batch: 2012337-1

Client: Great Western Operating Company, LLC
Work Order: 2012337
Project: Postle IC 09-342HNX

QC BATCH REPORT

Batch ID: **IC201218-1-1** Instrument ID **IC3** Method: **EPA300.0**

LCS	Sample ID: IC201218-1				Units: MG/L		Analysis Date: 12/18/2020 07:49				
Client ID:	Run ID: IC201218-1a1				Prep Date: 12/18/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	9.94	0.2	10		99	90-110				15	
SULFATE	49.8	1	50		100	90-110				15	

LCSD	Sample ID: IC201218-1				Units: MG/L		Analysis Date: 12/18/2020 10:28				
Client ID:	Run ID: IC201218-1a1				Prep Date: 12/18/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	9.92	0.2	10		99	90-110		9.94	0	15	
SULFATE	50.2	1	50		100	90-110		49.8	1	15	

MB		Sample ID: IC201218-1		Units: MG/L		Analysis Date: 12/18/2020 08:03	
Client ID:		Run ID: IC201218-1a1		Prep Date: 12/18/2020		DF: 1	
Analyte		Result	ReportLimit	Qual			
CHLORIDE		ND	0.2				
SULFATE		ND	1				

The following samples were analyzed in this batch:

2012337-1

Client: Great Western Operating Company, LLC
Work Order: 2012337
Project: Postle IC 09-342HXX

QC BATCH REPORT

Batch ID: **TD201221-1-1** Instrument ID **Balance** Method: **SM2540C**

LCS	Sample ID: TD201221-1				Units: MG/L			Analysis Date: 12/28/2020			
Client ID:		Run ID: TD201228-1A1				Prep Date: 12/21/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	368	20	400		92	85-115				14	

LCSD	Sample ID: TD201221-1			Units: MG/L			Analysis Date: 12/28/2020				
Client ID:	Run ID: TD201228-1A1			Prep Date: 12/21/2020			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	354	20	400		88	85-115		368	4	14	

MB		Sample ID: TD201221-1		Units: MG/L		Analysis Date: 12/28/2020	
Client ID:		Run ID: TD201228-1A1		Prep Date: 12/21/2020		DF: 1	
Analyte		Result	ReportLimit				
TOTAL DISSOLVED SOLIDS		ND	20				

The following samples were analyzed in this batch:

2012337-1