



Total Extractable Petroleum Hydrocarbons (Diesel)

Case Narrative

COGCC

Burkhart -- 25087038

Work Order Number: 1202226

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 02/20/2012.
2. The water sample was extracted by adding hexane to the water sample and shaking the resulting two phase solution according to SOP 603 Revision 12, which was developed at ALS. The hydrocarbons partition into the hexane layer, which is then removed for analysis.
3. The extract was then analyzed using GC with a capillary column and a flame ionization detector (FID) according to SOP 406 Revision 16 generally based on SW-846 Method 8000B and Method 8015B. The procedures are based on this general method because SW-846 does not have a specific method for total extractable petroleum hydrocarbons (TEPH) or diesel range organics. The only true modification from this method is that TEPH is a multicomponent mixture and is quantitated by summing the entire range, rather than individual peaks. All positive results were quantitated using the responses from the initial calibration curve using the external standard technique. Also, a confirmation column is not used, because the analyte is a multicomponent mixture and the specific carbon range of the peaks detected is specified on the individual sample reporting forms.
4. All initial and continuing calibration criteria were met.
5. The method blank associated with this project was below the MDL for diesel range organics.
6. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
7. Per method requirements, matrix QC was performed for this analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.



8. The sample was extracted and analyzed within the established holding time.
9. All surrogate recoveries were within the acceptance criteria.
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in SOP 939 Revision 4.

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.

Mindy Norton
Mindy Norton
Organics Primary Data Reviewer

2-29-12
Date

Sandra S. Agha
Organics Final Data Reviewer

2-29-12
Date



ALS
Data Qualifier Flags
Fuels

- G:** This flag indicates that a pattern resembling gasoline was detected in this sample.
- D:** This flag indicates that a pattern resembling diesel was detected in this sample.
- M:** This flag indicates that a pattern resembling motor oil was detected in this sample.
- C:** This flag indicates that a pattern resembling crude oil was detected in this sample.
- 4:** This flag indicates that a pattern resembling JP-4 was detected in this sample.
- 5:** This flag indicates that a pattern resembling JP-5 was detected in this sample.
- H:** This flag indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L:** This flag 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

Multiple flags may be used to indicate the presence of more than one product or component.



ALS
Data Qualifier Flags
Chromatography and Mass Spectrometry

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the data indicate the presence of a compound that meets the identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is outside the control criteria.
- +:** This flag indicates that the relative percent difference (RPD) exceeds the control criteria.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1202226

Client Name: COGCC

Client Project Name: Burkhart

Client Project Number: 25087038

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Burkhart 1/#200340214	1202226-1		WATER	20-Feb-12	12:00



ALS Laboratory Group

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

Chain-of-Custody

Form 202r8

WORKORDER # 1202226

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DISPOSAL Lab Return to Client

DATE 2/20/12
TURNAROUND STD

SAMPLER SITE ID
EDD FORMAT
PURCHASE ORDER
BILL TO COMPANY
INVOICE ATTN TO
ADDRESS
CITY / STATE / ZIP
PHONE
FAX
E-MAIL

PROJECT NAME *Bidwell, Burkhardt, Olson*
PROJECT NO. *25087038*
COMPANY NAME *Terracon Consultants*
SEND REPORT TO *John Axelsson / Amy Wolf*
ADDRESS *10625 W 170th Ave, Littleton, CO 80120*
CITY / STATE / ZIP
PHONE *303-983-3300*
FAX
E-MAIL *Jc.dellaport@terracon.com*

Ashley K Byrne

Dispersed Metals
Amzn's / Carbons
B TEX
TPH - GLO & DRO
Methane
EC, TDS, PH

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC
	<i>Bidwell I / #200340417</i>	<i>GW</i>	<i>2/20/12</i>	<i>935</i>	<i>10</i>	<i>✓</i>	
①	<i>Burkhardt I / #20034024</i>	<i> </i>	<i> </i>	<i>1200</i>	<i>10</i>	<i>✓</i>	
	<i>Olson I / #200340417</i>	<i> </i>	<i> </i>	<i>1500</i>	<i>10</i>	<i>✓</i>	

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	<i>[Signature]</i>	<i>Ashley K Byrne</i>	<i>2/20/12</i>	<i>1700</i>
RELINQUISHED BY	<i>[Signature]</i>	<i>John Axelsson</i>	<i>2-20-12</i>	<i>1700</i>
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

QC PACKAGE (check below)
<input type="checkbox"/> LEVEL II (Standard QC)
<input type="checkbox"/> LEVEL III (Std QC + forms)
<input type="checkbox"/> LEVEL IV (Std QC + forms + raw data)

Comments: *Please include sulfate, nitrate/nitrite w/ Total N*

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035



CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC

Workorder No: 1202226

Project Manager: AW

Initials: CDT Date: 2-20-12

1. Does this project require any special handling in addition to standard Paragon 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)	N/A	<input checked="" type="radio"/> 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?		YES	<input checked="" type="radio"/> 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	N/A	<input checked="" type="radio"/> YES	NO
15. Do perchlorate LCMS-MS samples have headspace? (at least 1/3 of container required)	<input checked="" type="radio"/> N/A	YES	NO
16. Were samples checked for and free from the presence of residual chlorine? (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	<input checked="" type="radio"/> N/A	YES	NO
17. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
18. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <input checked="" type="radio"/> #4		RAD ONLY	<input checked="" type="radio"/> YES
Cooler #: <u>1</u>			
Temperature (°C): <u>2.4</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.

RECEIVED 6 TOTAL UOA VIALS, SO ASSIGNED 2 FOR EACH ANALYSIS.

2/22/12: cancelled NO2/NO3 by 353.2 due to samples bottles being left out of cooler overnight. Replaced analysis with 300.0 NO2 and 300.0 NO3. aw 2/22/12

If applicable, was the client contacted? YES / NO / NA Contact: John Axelson aw 2/22/12 Date/Time: 2/22/12

Project Manager Signature / Date: C. Wolf 2/21/12

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

Diesel Range Organics

Method SW8015MB

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1202226

Client Name: COGCC

ClientProject ID: Burkhart 25087038

Lab ID: EX120222-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 22-Feb-12

Date Analyzed: 22-Feb-12

Prep Method: METHOD

Prep Batch: EX120222-2

QCBatchID: EX120222-2-1

Run ID: HCD120222-3A

Cleanup: NONE

Basis: N/A

File Name: F3F42042

Sample Aliquot: 160 ml

Final Volume: 4 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	1.13		1.25	91	57 - 132

Data Package ID: HCD1202226-1

Date Printed: Wednesday, February 29, 2012

ALS Environmental -- FC

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LIMS Version: 6.568

Diesel Range Organics

Method SW8015M Revision B

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1202226

Client Name: COGCC

ClientProject ID: Burkhart 25087038

Field ID:	Burkhart 1/#200340214
Lab ID:	1202226-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 20-Feb-12

Date Extracted: 22-Feb-12

Date Analyzed: 23-Feb-12

Prep Method: METHOD

Prep Batch: EX120222-2

QCBatchID: EX120222-2-1

Run ID: HCD120222-3A

Cleanup: NONE

Basis: As Received

File Name: F3F42046

Analyst: Joel F. Nolte

Sample Aliquot: 160 ML

Final Volume: 4 ML

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
68334-30-5	Diesel Range Organics	1	0.5	0.5	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
84-15-1	O-TERPHENYL	1.04		1.25	84	57 - 132

Data Package ID: HCD1202226-1

Diesel Range Organics

Method SW8015MB

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1202226

Client Name: COGCC

ClientProject ID: Burkhart 25087038

Lab ID: EX120222-2LCS

Sample Matrix: WATER

Prep Batch: EX120222-2

Sample Aliquot: 160 ml

% Moisture: N/A

QCBatchID: EX120222-2-1

Final Volume: 4 ml

Date Collected: N/A

Run ID: HCD120222-3A

Result Units: MG/L

Date Extracted: 02/22/2012

Cleanup: NONE

Clean DF: 1

Date Analyzed: 02/22/2012

Basis: N/A

Prep Method: METHOD

File Name: F3F42043

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
68334-30-5	Diesel Range Organics	5	4.34	0.5		87	36 - 150%

Lab ID: EX120222-2LCSD

Sample Matrix: WATER

Prep Batch: EX120222-2

Sample Aliquot: 160 ml

% Moisture: N/A

QCBatchID: EX120222-2-1

Final Volume: 4 ml

Date Collected: N/A

Run ID: HCD120222-3A

Result Units: MG/L

Date Extracted: 02/22/2012

Cleanup: NONE

Clean DF: 1

Date Analyzed: 02/23/2012

Basis: N/A

Prep Method: METHOD

File Name: F3F42044

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
68334-30-5	Diesel Range Organics	5	4.55	0.5		91	20	5

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
84-15-1	O-TERPHENYL	1.25	90		93		57 - 132

Data Package ID: HCD1202226-1