

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109



FOR OGCC USE ONLY

#6942

RECEIVED
3/30/2012

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

☒ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No: 2223047

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe):

GENERAL INFORMATION

OGCC Operator Number: 69175		Contact Name and Telephone	
Name of Operator: Petroleum Development Corporation		Name: Brandon Bruns	
Address: 1775 Sherman Street, Suite 3000		No: (303) 860-5800	
City: Denver State: CO Zip: 80203		Fax: (303) 860-5838	
API/Facility No: 05-123-13286		County: Weld	
Facility Name: Noffsinger 1		Facility Number: 05-123-13286	
Well Name: Noffsinger 1		Well Number: Noffsinger 1	
Location (QtrQtr, Sec, Twp, Rng, Meridian): SENW 5 T5N R64W 6th PM		Latitude: 40.42836 Longitude: -104.57429	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.):	Produced Water
Site Conditions: Is location within a sensitive area (according to Rule 901e)?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, attach evaluation.
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.):	Cultivated.
Soil type, if not previously identified on Form 2A or Federal Surface Use Plan:	Sands and Silty Sands
Potential receptors (water wells within 1/4 mi, surface waters, etc.):	Surface water area is located approximately 1,100' to the south of the Tank Battery, a water well is located 20' east, and residential buildings are located ~900' southeast; depth to groundwater is estimated to be >35 ft bgs.
Description of Impact (if previously provided, refer to that form or document):	
Impacted Media (check):	Extent of Impact:
<input checked="" type="checkbox"/> Soils	Form 19 submitted on February 27, 2012
<input type="checkbox"/> Vegetation	
<input type="checkbox"/> Groundwater	
<input type="checkbox"/> Surface water	
How Determined:	
Excavation, geoprobing, and soil sampling	

REMEDIALATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
The Immediate response action was provided in a Form 19 submitted on February 27, 2012. An aerial map of the site is included on Figure 1.
Describe how source is to be removed:
The source area was previously excavated and impacted material was transported and disposed of as described in the Form 19 submitted on February 27, 2012.
Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:
PDC plans to inject a chemical oxidant (chemox) to address residual hydrocarbon impacts within the subsurface at the Site. The chemox will be introduced through one temporary monitoring well location (BH-01) that was installed during geoprobing activities (illustrated on Figure 2), as well as two geoprobing injection points and one horizontal bore injection well to be field located in the vicinity of the hydrocarbon plume. Additionally, due to the large extent of impacted material, PDC plans to conduct soil vapor extraction (SVE) activities utilizing BH-01 and the horizontal well location to extract additional VOC mass in the vapor phase. Vapor samples will be collected from the SVE remediation system effluent stream to help determine VOC impacts within the subsurface. Subsequently, PDC will conduct geoprobing and soil sampling activities near the geoprobing injection locations to determine if injection activities successfully remediated residual hydrocarbon impacts to COGCC Table 910-1 limits. Should confirmation soil samples and vapor samples collected from the SVE remediation System indicate that concentrations are below the COGCC Table 910-1 limits for hydrocarbon impacts, an NFA letter will be submitted to the COGCC and the temporary monitoring locations will be abandoned. However, should the samples indicate that hydrocarbon impacts continue to exceed the Table 910-1 limits, PDC will evaluate further remediation alternatives.

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Page 2

REMEDIATION WORKPLAN (CONT.)

OGCC Employee

Tracking Number: _____
Name of Operator: Petroleum Development Corporation
OGCC Operator No: 69175
Received Date: _____
Well Name & No: Noffsinger 1
Facility Name & No.: Noffsinger 1

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Groundwater was not encountered during excavation or geoprobing activities.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The area where the excavation is located is used as the condensate tank secondary containment area and partially as an equipment access area to the tank battery location and consists of road base. The excavation has been backfilled and compacted with clean material and the ground surface was contoured to match pre-existing conditions.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe: In-situ remediation activities will be completed at the Site.

The hydrocarbon plume has been delineated and no further subsurface investigations are required. Laboratory analytical results from soil samples that were collected during excavation and geoprobing activities indicate that moderate hydrocarbon impacts exist outside the extents of the previous excavation. The laboratory analytical results are provided in Table 1 and the temporary monitoring well locations are illustrated on Figure 2.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Waste was disposed of at the Waste Management Facility in Ault, CO.

IMPLEMENTATION SCHEDULE

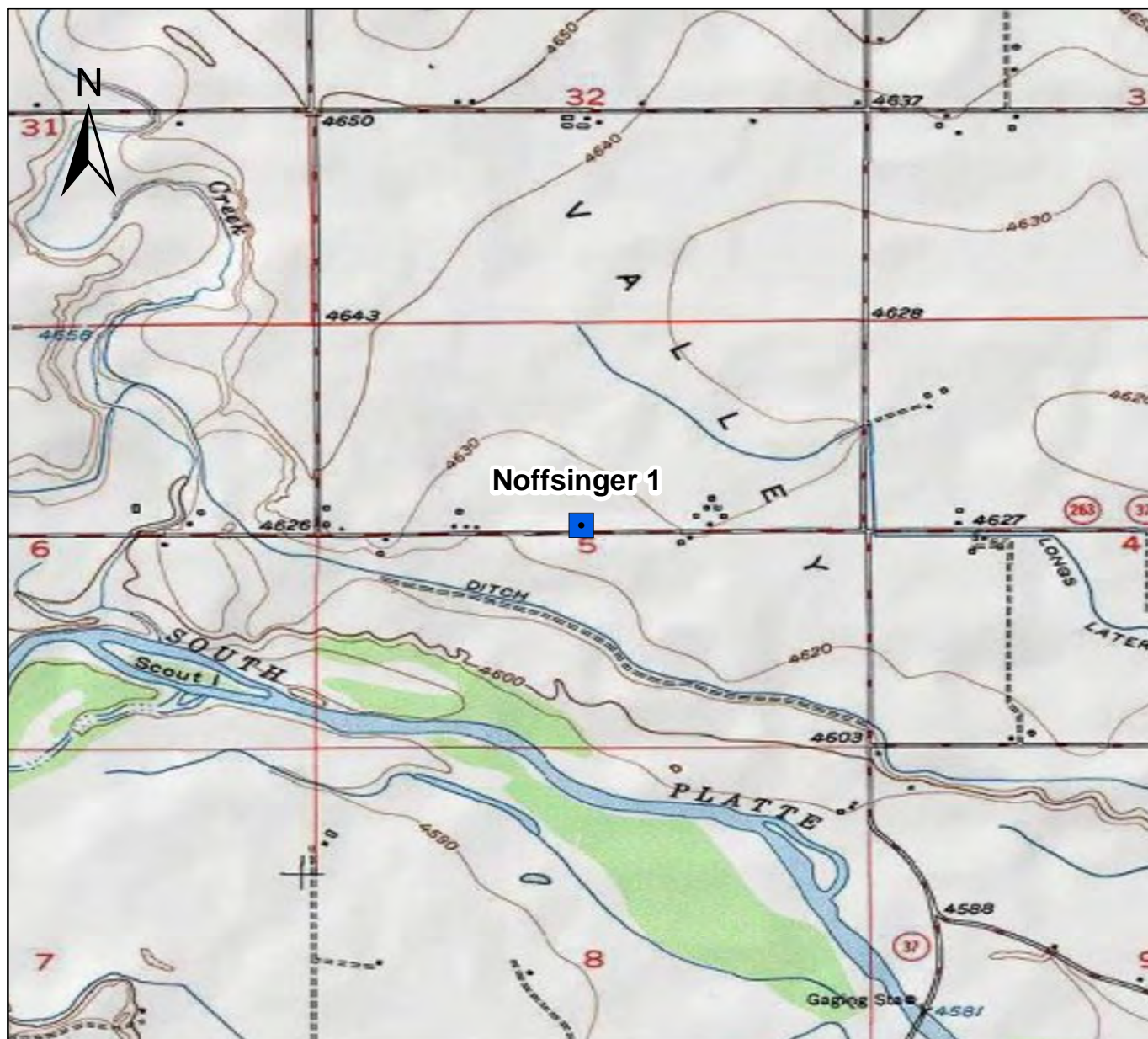
Date Site Investigation Began: <u>11/23/2011</u>	Date Site Investigation Completed: <u>1/25/12</u>	Remediation Plan Submitted: _____
Remediation Start Date: <u>11/23/2011</u>	Anticipated Completion Date: <u>NA</u>	Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Brandon Bruns

Signed: *Brandon Bruns* Title: EHS Professional Date: 3/30/12

OGCC Approved: *John Axelsson* FOR Title: John Axelsson Date: 04/12/2012
EPS NE Region



0 750 1,500 3,000 4,500
Feet



Figure 1

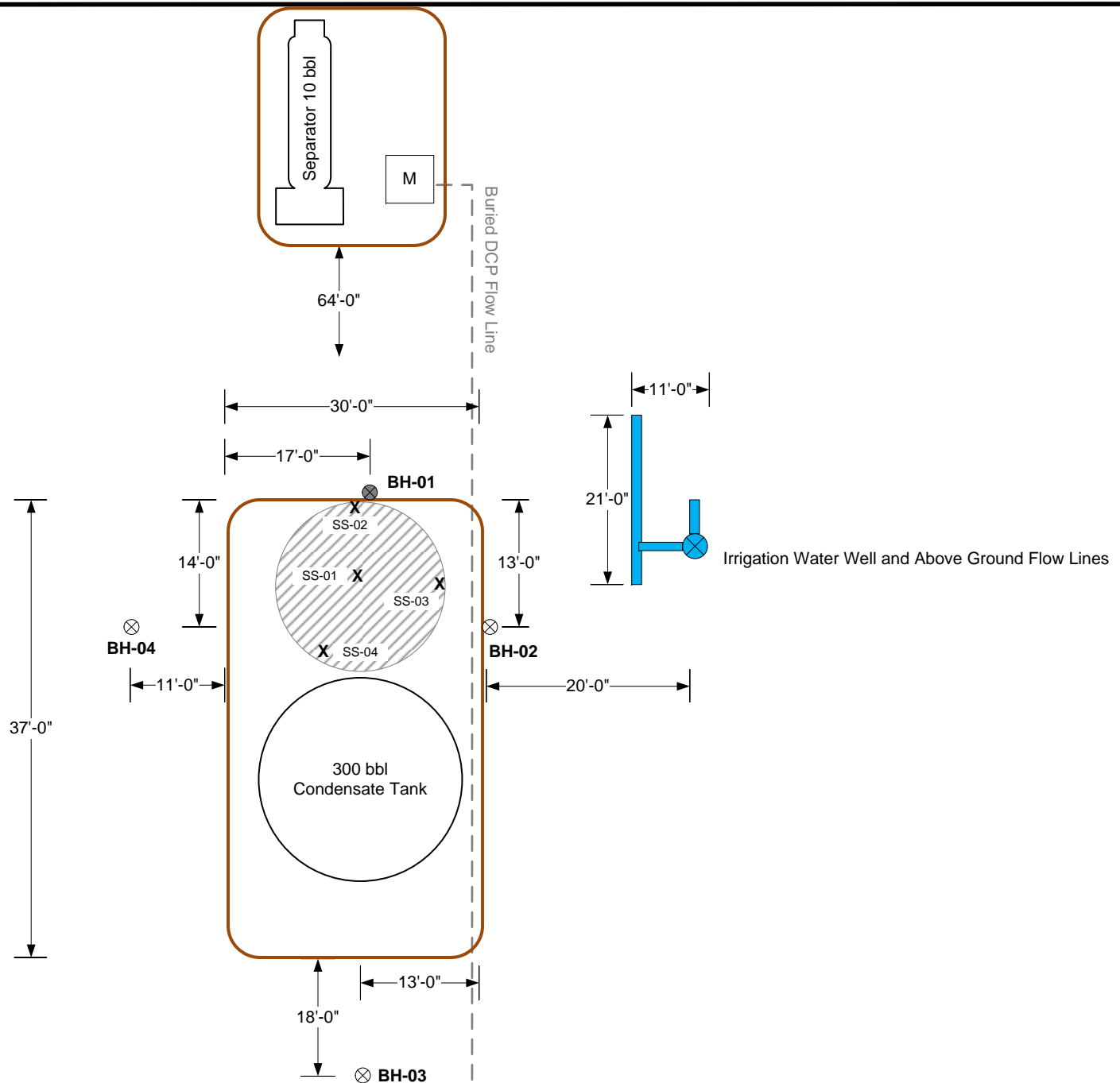
Site Location Map
Noffsinger 1
SENW S5 T5N R64W
Weld County, Colorado

Drawn By: CAW
Date: 02/20/2012





Surface
Drainage



PROJECT
NO:

DRAWN BY: BDH

DATE: 1/30/12

Facility Diagram
PDC Energy – DJ Basin
Noffsinger No. 1
T5N R64W S5 SENW
Weld County, CO



5690 Webster Avenue
Arvada CO 80002

LEGEND

- Earthen Berm
- Bore Hole Location
- Bore Hole Location With Temporary Well Installed
- Approximate Extent of Excavation
- Excavation Soil Sample

M Meter Shed

FIGURE 2

Not to Scale

TABLE 1
NOFFSINGER 1
SOIL ANALYTICAL RESULTS TABLE

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzne (mg/kg)	Total Xylenes (mg/kg)	Napthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
SS01 @ 10'	11/24/2011	10	874	ND	ND	0.071	4.635	0.39	1,590
SS02 @ 8'	11/24/2011	8	82.3	ND	ND	ND	ND	0.23	2,890
SS03 @ 8'	11/24/2011	8	343	ND	ND	ND	ND	0.5	1,700
SS04 @ 8'	11/24/2011	8	58.5	ND	ND	ND	ND	ND	2,241
BH02 - 37-40	1/25/2012	37-40	74.5	ND	ND	ND	ND	ND	ND
BH03 - 25-35	1/25/2012	25-35	0	ND	ND	ND	ND	ND	ND
BH04 - 25-35	1/25/2012	25-35	0	ND	ND	ND	ND	ND	ND
COGCC standards for Soil (mg/kg) ⁽¹⁾				0.17	85	100	175	23	500

Notes:

1). Standards for Soil are taken from 2 CCR 404-1, Table 910-1, effective April 1, 2009.

2). TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

GRO - Gasoline range organics.

DRO - Diesel range organics.

mg/kg= Milligrams per kilogram.

bgs - Below ground surface.

ppm - Parts per million

ND- Not Detected

Bold red values indicate an exceedance of the COGCC soil standards for the Site.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 24, 2011

Brian Dodek
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: PDC - Noffsinger 1

Enclosed are the results of analyses for samples received by Summit Scientific on 11/23/11 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1

Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@10'	R111178-01	Soil	11/23/11 11:30	11/23/11 17:00
SS02@8'	R111178-02	Soil	11/23/11 11:35	11/23/11 17:00
SS03@8'	R111178-03	Soil	11/23/11 11:40	11/23/11 17:00
SS04@8'	R111178-04	Soil	11/23/11 11:45	11/23/11 17:00

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1

Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

SS01@10'
R111178-01 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 11/23/11 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1200	50	mg/kg	1	1112305	11/23/11	11/23/11	8015 DRO	

Date Sampled: 11/23/11 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/23/11 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.39	0.050	mg/kg	10	1112303	11/23/11	11/23/11	EPA 8260B	
Benzene	ND	0.0050	"	1	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.071	0.050	"	10	"	"	"	"	
m,p-Xylene	4.6	0.10	"	"	"	"	"	"	
o-Xylene	0.035	0.0050	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	390	5.0	"	10	"	"	"	"	

Date Sampled: 11/23/11 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	78.4-125		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1

Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

SS02@8'
R111178-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 11/23/11 11:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2700	50	mg/kg	1	1112305	11/23/11	11/24/11	8015 DRO	

Date Sampled: 11/23/11 11:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		124 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/23/11 11:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.23	0.0050	mg/kg	1	1112303	11/23/11	11/24/11	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	190	5.0	"	10	"	"	"	"	

Date Sampled: 11/23/11 11:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	78.4-125		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1

Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

SS03@8'
R111178-03 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 11/23/11 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1300	50	mg/kg	1	1112305	11/23/11	11/24/11	8015 DRO	

Date Sampled: 11/23/11 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.1 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/23/11 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.50	0.050	mg/kg	10	1112303	11/23/11	11/24/11	EPA 8260B	
Benzene	ND	0.0050	"	1	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	400	5.0	"	10	"	"	"	"	

Date Sampled: 11/23/11 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	78.4-125		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1

Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

SS04@8'
R111178-04 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 11/23/11 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2200	50	mg/kg	1	1112305	11/23/11	11/24/11	8015 DRO	

Date Sampled: 11/23/11 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		116 %	88.8-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/23/11 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	1112303	11/23/11	11/23/11	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	41	0.50	"	"	"	"	"	"	

Date Sampled: 11/23/11 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		92.0 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	78.4-125		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1
Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1112305 - EPA 3550A

Blank (1112305-BLK1)

Prepared & Analyzed: 11/23/11

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.9 " 12.5 103 88.8-124

LCS (1112305-BS1)

Prepared & Analyzed: 11/23/11

C10-C28 (DRO) 492 50 mg/kg 501 98.3 81.4-129 9.26

LCS Dup (1112305-BSD1)

Prepared & Analyzed: 11/23/11

C10-C28 (DRO) 495 50 mg/kg 501 98.9 81.4-129 0.606 9.26

Matrix Spike (1112305-MS1)

Source: R111162-01

Prepared & Analyzed: 11/23/11

C10-C28 (DRO) 489 50 mg/kg 501 44.0 88.8 77.8-133 8.48

Matrix Spike Dup (1112305-MSD1)

Source: R111162-01

Prepared & Analyzed: 11/23/11

C10-C28 (DRO) 456 50 mg/kg 501 44.0 82.1 77.8-133 7.06 8.48

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1
Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1112303 - EPA 5030 Soil MS

Blank (1112303-BLK1)

Prepared & Analyzed: 11/23/11

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
m,p-Xylene	ND	0.010	"							
o-Xylene	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0401		"	0.0400		100	67.4-143			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.2	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.6	78.4-125			

LCS (1112303-BS1)

Prepared & Analyzed: 11/23/11

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0873	0.0050	"	0.100		87.3	61-139		11.1	
Toluene	0.0882	0.0050	"	0.100		88.2	64-132		10.9	
Ethylbenzene	0.0958	0.0050	"	0.100		95.8	68.7-135		20	
m,p-Xylene	0.184	0.010	"	0.200		92.1	70.4-129		20	
o-Xylene	0.0923	0.0050	"	0.100		92.3	66.9-126		20	
Surrogate: 1,2-Dichloroethane-d4	0.0416		"	0.0400		104	67.4-143			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.3	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.5	78.4-125			

LCS Dup (1112303-BSD1)

Prepared & Analyzed: 11/23/11

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0888	0.0050	"	0.100		88.8	61-139	1.70	11.1	
Toluene	0.0899	0.0050	"	0.100		89.9	64-132	1.99	10.9	
Ethylbenzene	0.0971	0.0050	"	0.100		97.1	68.7-135	1.37	20	
m,p-Xylene	0.186	0.010	"	0.200		93.0	70.4-129	0.891	20	
o-Xylene	0.0933	0.0050	"	0.100		93.3	66.9-126	1.07	20	
Surrogate: 1,2-Dichloroethane-d4	0.0416		"	0.0400		104	67.4-143			
Surrogate: Toluene-d8	0.0392		"	0.0400		97.9	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	78.4-125			

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1
Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1112303 - EPA 5030 Soil MS

Matrix Spike (1112303-MS1)

Source: R111162-01

Prepared & Analyzed: 11/23/11

Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20	
Benzene	0.0892	0.0050	"	0.100	0.00	89.2	42.9-137		17.9	
Toluene	0.0886	0.0050	"	0.100	0.00	88.6	42.6-130		11.9	
Ethylbenzene	0.0953	0.0050	"	0.100	0.00	95.3	39-133		20	
m,p-Xylene	0.184	0.010	"	0.200	0.00	92.0	34.7-134		20	
o-Xylene	0.0927	0.0050	"	0.100	0.00	92.7	41.3-126		20	
Surrogate: 1,2-Dichloroethane-d4	0.0458		"	0.0400		115	67.4-143			
Surrogate: Toluene-d8	0.0386		"	0.0400		96.6	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		99.9	78.4-125			

Matrix Spike Dup (1112303-MSD1)

Source: R111162-01

Prepared & Analyzed: 11/23/11

Naphthalene	ND	0.0050	mg/kg		0.00		26.4-144		20	
Benzene	0.0874	0.0050	"	0.100	0.00	87.4	42.9-137	1.94	17.9	
Toluene	0.0902	0.0050	"	0.100	0.00	90.2	42.6-130	1.71	11.9	
Ethylbenzene	0.0946	0.0050	"	0.100	0.00	94.6	39-133	0.695	20	
m,p-Xylene	0.183	0.010	"	0.200	0.00	91.7	34.7-134	0.343	20	
o-Xylene	0.0922	0.0050	"	0.100	0.00	92.2	41.3-126	0.519	20	
Surrogate: 1,2-Dichloroethane-d4	0.0438		"	0.0400		110	67.4-143			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	77.3-114			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.3	78.4-125			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: PDC - Noffsinger 1

Project Number: 0188
Project Manager: Brian Dodek

Reported:
11/24/11 07:05

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 29, 2012

Mike Lindstrom
Tasman Geosciences
5690 Webster Street
Arvada, CO 80002
RE: Noffsinger 1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/26/12 08:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02-37-40	R201177-01	Soil	01/25/12 10:25	01/26/12 08:45
BH03-25-35	R201177-02	Soil	01/25/12 11:20	01/26/12 08:45
BH04-25-35	R201177-03	Soil	01/25/12 12:15	01/26/12 08:45

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1

Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

201177

Summit Scientific

52

74 | Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-277-9531 Fax

Page 1 of 1

Client: Tasman Geosciences

Address: 5690 Webster Street

City/State/Zip: Arvada, CO 80002

Phone: (720) 988-2024 Fax:

Sampler Name: Ben Hinchey

Sampler Name: Brian Humphrey

Project Manager: Mike Lindstrom

E-Mail: mlindstrom@fisman-geo.com

Project Name: NOFFICER 1

Project Number: _____

[illegible]

www.s2scientific.com

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

BH02-37-40
R201177-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/25/12 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2012607	01/26/12	01/26/12	8015 Full Carbon Chain	

Date Sampled: **01/25/12 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		94.2 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/12 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
Benzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Naphthalene	ND	10	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **01/25/12 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.3 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		96.3 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.7 %	78.4-125		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

BH03-25-35
R201177-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/25/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2012607	01/26/12	01/26/12	8015 Full Carbon Chain	

Date Sampled: **01/25/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.4 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
Benzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Naphthalene	ND	10	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **01/25/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.2 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.8 %	78.4-125		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

BH04-25-35
R201177-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/25/12 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2012607	01/26/12	01/26/12	8015 Full Carbon Chain	

Date Sampled: **01/25/12 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.4 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/12 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	5.0	ug/kg	1	2012804	01/28/12	01/29/12	EPA 8260B	
Benzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Xylenes (total)	ND	10	"	"	"	"	"	"	
Naphthalene	ND	10	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **01/25/12 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.9 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.0 %	78.4-125		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 2012607 - EPA 3550A

Blank (2012607-BLK1)

Prepared: 01/26/12 Analyzed: 01/27/12

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.2 " 12.5 97.8 80-124

LCS (2012607-BS1)

Prepared: 01/26/12 Analyzed: 01/27/12

C10-C28 (DRO) 580 50 mg/kg 501 116 81.4-129 9.26

LCS Dup (2012607-BSD1)

Prepared: 01/26/12 Analyzed: 01/27/12

C10-C28 (DRO) 573 50 mg/kg 501 114 81.4-129 1.30 9.26

Matrix Spike (2012607-MS1)

Source: R201176-01

Prepared: 01/26/12 Analyzed: 01/27/12

C10-C28 (DRO) 648 50 mg/kg 501 83.1 113 77.8-133 8.48

Matrix Spike Dup (2012607-MSD1)

Source: R201176-01

Prepared: 01/26/12 Analyzed: 01/27/12

C10-C28 (DRO) 636 50 mg/kg 501 83.1 110 77.8-133 1.86 8.48

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 2012804 - EPA 5030 Soil MS

Blank (2012804-BLK1)

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/kg							
Benzene	ND	5.0	"							
Toluene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Xylenes (total)	ND	10	"							
Naphthalene	ND	10	"							
Gasoline Range Hydrocarbons	ND	500	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>34.8</i>		<i>"</i>	<i>39.7</i>		<i>87.7</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>35.8</i>		<i>"</i>	<i>40.0</i>		<i>89.4</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>38.7</i>		<i>"</i>	<i>40.0</i>		<i>96.8</i>	<i>78.4-125</i>			

LCS (2012804-BS1)

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/kg				60-140		25	
Benzene	75.4	5.0	"	100		75.4	61-139		11.1	
Toluene	73.6	5.0	"	100		73.6	64-132		10.9	
Ethylbenzene	82.4	5.0	"	100		82.4	68.7-135		20	
m,p-Xylene	154	5.0	"	200		77.1	70.4-129		20	
o-Xylene	78.4	5.0	"	100		78.4	66.9-126		20	
Naphthalene	ND	10	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>34.2</i>		<i>"</i>	<i>39.7</i>		<i>86.2</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>35.3</i>		<i>"</i>	<i>40.0</i>		<i>88.3</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>39.6</i>		<i>"</i>	<i>40.0</i>		<i>98.9</i>	<i>78.4-125</i>			

LCS Dup (2012804-BSD1)

Prepared: 01/28/12 Analyzed: 01/29/12

Methyl tert-butyl ether	ND	5.0	ug/kg				60-140		25	
Benzene	76.7	5.0	"	100		76.7	61-139	1.77	11.1	
Toluene	75.8	5.0	"	100		75.8	64-132	2.93	10.9	
Ethylbenzene	82.6	5.0	"	100		82.6	68.7-135	0.327	20	
m,p-Xylene	156	5.0	"	200		77.8	70.4-129	0.833	20	
o-Xylene	78.7	5.0	"	100		78.7	66.9-126	0.382	20	
Naphthalene	ND	10	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>34.0</i>		<i>"</i>	<i>39.7</i>		<i>85.6</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>35.8</i>		<i>"</i>	<i>40.0</i>		<i>89.5</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>39.1</i>		<i>"</i>	<i>40.0</i>		<i>97.6</i>	<i>78.4-125</i>			

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 2012804 - EPA 5030 Soil MS

Matrix Spike (2012804-MS1)				Source: R201177-01		Prepared: 01/28/12		Analyzed: 01/29/12		
Methyl tert-butyl ether	ND	5.0	ug/kg		ND		50-150		30	
Benzene	77.0	5.0	"	100	ND	77.0	42.9-137		17.9	
Toluene	75.2	5.0	"	100	ND	75.2	42.6-130		11.9	
Ethylbenzene	83.1	5.0	"	100	ND	83.1	39-133		20	
m,p-Xylene	153	5.0	"	200	ND	76.7	34.7-134		20	
o-Xylene	78.7	5.0	"	100	ND	78.7	41.3-126		20	
Naphthalene	ND	10	"		ND		26.4-144		30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>36.0</i>		<i>"</i>	<i>39.7</i>		<i>90.8</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>35.9</i>		<i>"</i>	<i>40.0</i>		<i>89.8</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>40.4</i>		<i>"</i>	<i>40.0</i>		<i>101</i>	<i>78.4-125</i>			

Matrix Spike Dup (2012804-MSD1)				Source: R201177-01		Prepared: 01/28/12		Analyzed: 01/29/12		
Methyl tert-butyl ether	ND	5.0	ug/kg		ND		50-150		30	
Benzene	77.7	5.0	"	100	ND	77.7	42.9-137	0.970	17.9	
Toluene	76.0	5.0	"	100	ND	76.0	42.6-130	1.19	11.9	
Ethylbenzene	83.8	5.0	"	100	ND	83.8	39-133	0.935	20	
m,p-Xylene	156	5.0	"	200	ND	78.1	34.7-134	1.76	20	
o-Xylene	79.8	5.0	"	100	ND	79.8	41.3-126	1.44	20	
Naphthalene	ND	10	"		ND		26.4-144		30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>37.0</i>		<i>"</i>	<i>39.7</i>		<i>93.1</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>36.3</i>		<i>"</i>	<i>40.0</i>		<i>90.8</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>40.8</i>		<i>"</i>	<i>40.0</i>		<i>102</i>	<i>78.4-125</i>			

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: Noffsinger 1
Project Number: [none]
Project Manager: Mike Lindstrom

Reported:
01/29/12 19:30

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.