RECR - 17

SITE INVESTIGATION REPORT

DATE: 04/19/12

Souder, Miller & Associates ♦ 401 North Seventeenth Street, Suite 4 ♦ Las Cruces, NM 88005-8131
(575) 647-0799 ♦ (800) 647-0799 ♦ fax (575) 647-0680

April 19, 2012 #5321437.1.1-3

Mr. Jim Griswold
Senior Hydrologist
EMNRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505
(505) 476-3465
jim.griswold@state.nm.us

RE: SITE INVESTIGATION REPORT, BLACKROCK OIL STATE CY LEASE SITE, 14 MILES WEST OF TATUM, LEA COUNTY, NEW MEXICO

Dear Mr. Griswold:

Enclosed please find the Site Investigation Report for the Blackrock Oil State CY Lease (Blackrock Oil) site located approximately 14 miles west of Tatum, New Mexico. This report for the Blackrock Oil site is being submitted pursuant to the State of New Mexico General Services Department Purchasing Division Price agreement #10-805-00-07208 and Purchase Order (PO) #52100-0000033800 issued by the New Mexico Energy, Minerals & Natural Resources (EMNRD) Oil Conservation Division (OCD). All work was completed in accordance with the Souder, Miller & Associates (SMA) workplan dated November 29, 2011 and previously approved by OCD.

SMA appreciates this opportunity to provide environmental consulting services to OCD. If you have any questions or comments concerning this report, please feel free to call me at (800) 647-0799 or contact me via e-mail at the address provided below.

Sincerely,
MILLER ENGINEERS, INC. D/B/A
SOUDER, MILLER & ASSOCIATES

Clay P. Kiesling, P.G.
Senior Geoscientist
clay.kiesling@soudermiller.com
x1304

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1.0 EXECUTIVE SUMMARY

Souder, Miller & Associates (SMA), in accordance with the State of New Mexico General Services Department Purchasing Division Price Agreement #10-805-00-07208 and Purchase Order (PO) #52100-0000033800 issued by the New Mexico Energy, Minerals & Natural Resources (EMNRD) Oil Conservation Division (OCD), has completed the investigation of the Blackrock Oil State CY Lease (Blackrock Oil) site. The Blackrock Oil site is located in the Southwest ¼ of Section 30, Township 12S, Range 34E in Lea County, New Mexico and is approximately 14 miles west of Tatum, New Mexico. The Blackrock Oil site consists of an abandoned, former work-over or production pit. Investigation activities included the additional investigation and attempted delineation of remaining petroleum and chloride impacted soil and naturally occurring radioactive materials (NORM) previously encountered at the Blackrock Oil site. All additional investigation activities were conducted at the site on March 13, 2012. The following Site Investigation Report summarizes the results of the pot-holing investigation and recommendations for further activities at the Blackrock Oil site.

Various photographs of Blackrock Oil site investigation, 14 miles west of Tatum, Lea County, New Mexico

2.0 BACKGROUND

Work previously completed at the site included the initial assessment and remediation of the site by Kleinfelder West, Inc. (Kleinfelder) between May 31, 2007 and June 28, 2007. At the time, approximately 440 cubic yards (yd^3) of petroleum, chloride and NORM impacted soil was excavated and disposed of at the Gandy Corporation landfarm facility. The NORM impacted soil transported to the Gandy Corporation landfarm facility was determined to be below the applicable New Mexico Radiation Control Bureau (NMRCB) standards described in 20.3.14.1403.C New Mexico Administrative Code (NMAC). Additionally, approximately 440 yd^3 of clean backfill material was transported to the site and stockpiled north of the caliche road adjacent to the site for future use as backfill material. Kleinfelder also collected two (2) soil samples from the bottom of the approximately 40 feet square by approximately 10 feet deep excavation. Results from the soil sample collected in the southeast portion of the pit, at a location where the field screening levels for NORM exceeded the NMRCB standard and where the excavation followed a vertical fissure of visibly petroleum stained soil, indicated total petroleum hydrocarbon (TPH) concentrations in excess of the applicable standard. During the initial assessment and remediation performed by Kleinfelder, a lined and bermed area immediately west of the excavation area was also constructed at the site to stockpile contaminated soil prior to transport of the soil to the Gandy Corporation landfarm.

3.0 INVESTIGATION ACTIVITIES PERFORMED ON-SITE

SMA staff visited the site on March 13, 2012 to oversee all pot-holing activities and collect both field and laboratory soil samples to further investigate the extent of soil contamination at the site. The site location is shown in Figure 1 and a site map is provided in Figure 2. Photographs of site investigation activities are included in Appendix A. For this investigation, Gandy Corporation provided the heavy equipment and operator necessary to conduct pot-holing activities at the site. All investigation activities were conducted under the direction and oversight of SMA staff. Gandy Corporation also obtained utility clearance from New Mexico One-Call prior to the start of pot-holing activities. In addition to the health and safety requirements of Gandy Corporation, a site specific Health and Safety Plan was also produced by SMA and a copy is included as Appendix C. Copies of all field notes are included in Appendix D.

3.1 Soil Sampling Procedures

During pot-holing and soil sampling activities, a properly calibrated photo-ionization detector (PID) was used to conduct field headspace testing of field soil samples for petroleum contamination. Field headspace testing for petroleum contamination was conducted in accordance with the New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) Guidelines for Corrective Action (March 13, 2000), Chapter 1.4.1.1. Field screening of NORM was also conducted on field soil samples using a properly calibrated Ludlum Model 19 Micro R Meter (scintillator). Soil samples were collected for field headspace, scintillator readings and laboratory analysis from four (4) separate pot-hole areas as illustrated in Figure 3.

The initial pot-hole area (S-1) was advanced near the southeast corner of the previous excavation area which, based on Kleinfelder's previous excavation and report, contained the highest NORM readings and seemed to follow a vertical fissure of petroleum stained soil. Additional pot-hole areas were excavated to the north (S-2), northwest (S-3) and west (S-4) of the initial S-1 pot-hole area. Several additional pot-hole areas were initially anticipated. However, the locations of oil and/or gas pipelines and an overhead electric line (Figure 2) prevented further excavation activities towards the east and south of the site. All four (4) pot-hole areas were advanced vertically as far as practical based on the lithology encountered (caliche) and the vertical reach of the excavator.

Soil samples for field headspace and scintillator readings were collected from each pot-hole area at depths ranging from approximately 5 to 25 feet below ground surface (bgs). Two (2) soil samples were also collected from each pot-hole area at 15 feet bgs and at the total depth of each pot-hole area for laboratory analysis of a variety of volatile hydrocarbon constituents using EPA Method 8021B, for TPH (full range) using EPA Method 8015B and for chloride using EPA Method 300.0. Two (2) additional soil samples were collected from locations with generally the highest observed scintillator readings (S-1 at 15 feet and 20 feet bgs) for laboratory analysis of radionucleoids using EPA Method E903.0/E904.0. All soil samples

were collected in new, 4-ounce glass jars, labeled, immediately placed on ice and shipped under standard chain of custody procedures to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico for analysis.

3.2 Soil Sampling Results

All soil field survey results are included in Table 1 and a summary of the soil laboratory analytical results is provided in Table 2. Both tables contain various published standards for soil contamination with references to the applicable New Mexico Administrative Code (NMAC) or guideline publication. A copy of the laboratory analytical report is provided in Appendix B.

Petroleum & Chloride Contamination

As anticipated, field soil screening results indicated the area of highest observed petroleum contamination was in the southeast corner of the former pit area (pot-hole area S-1) with a PID reading of 843 parts per million by volume (ppmv) at a total depth of approximately 20 feet bgs. The corresponding laboratory sample revealed diesel range organic (DRO) concentrations of 4,500 milligrams per kilogram (mg/Kg), motor oil range organic (MRO) concentrations of 1,500 mg/kg and gasoline range organic (GRO) concentrations of 330 mg/kg, all in excess of one or more applicable guidelines and/or standards. Ethylbenzene at a concentration of 2.2 mg/kg and total xylenes at a concentration of 5.5 mg/kg were also detected in the soil sample obtained from the total depth of S-1. DRO and MRO concentrations in excess of applicable standards were also present in the soil sample collected from S-1 at a depth of approximately 15 feet bgs. Visual documentation of soil contamination and the color change observed in S-1 with increasing depth is provided in Photographs #7, #8, #9 and #10 of Appendix A.

Pot-hole area S-2, located near the northeast corner of the former pit area, also revealed DRO and MRO concentrations in excess of applicable standards from the soil sample collected at a depth of approximately 20 feet bgs and from the soil sample collected at a total depth of approximately 25 feet bgs. The soil samples collected from pot-hole areas S-3 and S-4 were below laboratory practical quantitation (PQL) for all analyzed petroleum contaminants of concern.

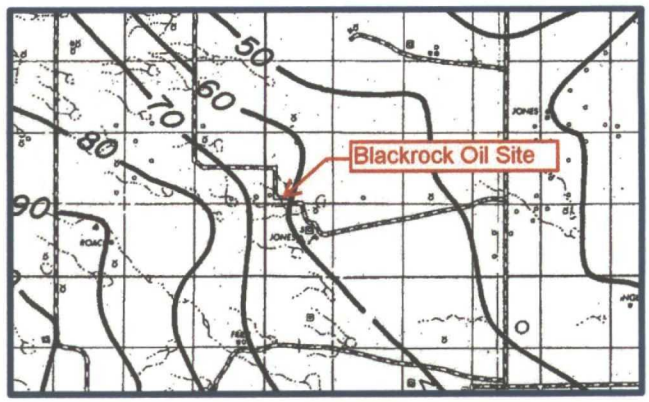
Chloride was detected in seven (7) of the eight (8) soil samples collected for laboratory analysis. However, all chloride concentrations were well below the applicable standard of 250 mg/kg for a permanent pit release confirmation as described in 19.15.17.13.C(3) NMAC.

NORM Contamination

Excluding the surface of the previous excavation area, field soil screening of NORM indicated that the highest level of NORM occurred in pot-hole area S-1 at a depth of approximately 20 feet bgs with a scintillator reading of 21 microroentgens per hour (µR/hr). The next highest level of NORM was also observed in S-1 at a depth of approximately 15 feet bgs with a scintillator reading of 19 µR/hr. Background readings at the surface were observed to be 10 µR/hr. All field soil screenings results were below the standard of 50 µR/hr for exempt NORM as described in 20.3.14.1403.C NMAC.

SMA also collected soil samples for laboratory analysis of radionucleoids from the two (2) areas of highest observed NORM. Laboratory results indicated that the highest radionucleoid concentration (radium 226) occurred in S-1 at a depth of 15 feet bgs and at a concentration of 11.4 picocuries per gram (pCi/g), which is below the standard of 30 pCi/g for exempt NORM as described in 20.3.14.1403.C NMAC.

4.0 RECEPTOR SURVEY



The general location of the site is illustrated in Figure 1, which is based on the Dallas Store and Frier Ranch, New Mexico (1978) 7.5 Minute Series United States Geological Survey (USGS) topographic map. There were no private, municipal or public water wells found within a 1,000 foot or 1-mile search radius of the site and the only well located within the search radius was a 1955 natural resource exploratory well completed by Coroco Drilling Co. and subsequently abandoned (Permit #: L-02747). Figure 4 illustrates the location of the exploratory well and depth to water information. The illustration above is from the Lea County Groundwater Contour Map (1978) and locates the Blackrock Oil site near the 60 foot groundwater contour. All water well information was obtained from the New Mexico Office of the State Engineer (NMOSE) WATERS database and available literature. Based on available depth to water and groundwater contour information, it is anticipated that groundwater at the Blackrock Oil site likely occurs at a depth of approximately 70 to 80 feet below ground surface with a flow direction towards the northeast.

5.0 LAND USE

The Blackrock Oil site is located on New Mexico State Land with an active oil and gas lease to Occidental Permian Ltd. (Lease #E021090002) and also an active agricultural lease to the Philip F. Frier Trust (Lease #GT3100). All adjacent property to the site consists of the same land use as the site itself and is generally undeveloped rangeland with a nearby gravel/caliche pit. The current land use within a 1,000 foot radius of the site is illustrated in Figure 5.

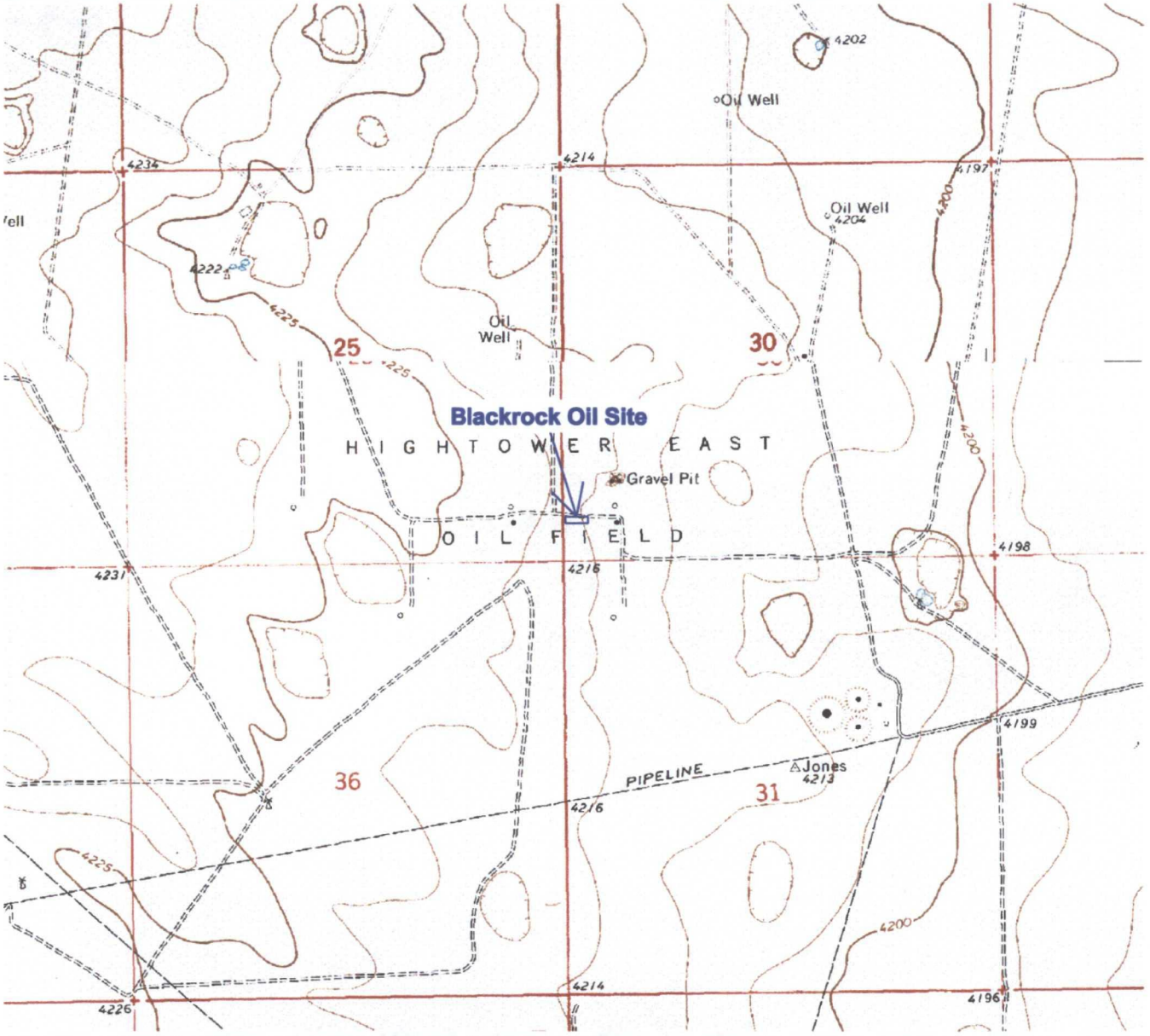
6.0 CONCLUSIONS/RECOMMENDATIONS

Based on available data, SMA believes that the primary contaminant of concern at the Blackrock Oil site is petroleum contamination and not NORM or chloride contamination. Additionally, as demonstrated by the soil samples collected from pot-hole areas S-1 and S-2, the majority of petroleum contamination was encountered in the southeast and northeast portion of the former pit/excavation area and extended to a total depth of 20 to 25 feet bgs. As discussed previously, oil/gas pipelines located immediately north and east of the site and an overhead electric line located adjacent to the south side of the site prevented delineation of the horizontal extent of petroleum contamination. The vertical extent of petroleum contamination could also not be determined at this time due to the depth of contamination and lithology of the site.

SMA believes a dig and haul operation to remove the petroleum contamination observed is not a practical remediation strategy due to the depth of observed contamination, nearby utilities and lithology of the site. As such, SMA recommends backfilling the former pit area with clean fill material currently stockpiled at the site, removing the berm and plastic sheeting west of the former pit area, general site restoration and installation of a single groundwater monitoring well near pot-hole area S-1. While there are no potential receptors near the Blackrock Oil site at this time, the amount of soil contamination encountered

and anticipated depth to water suggests groundwater may be impacted by petroleum contaminants associated with the former work-over/production pit. In accordance with 19.15.30.1 NMAC, groundwater shall meet the standards set forth in 20.6.2.3103 NMAC and a groundwater monitoring well is needed to determine the magnitude of dissolved-phase petroleum contamination, if any, at the Blackrock Oil site.

Figures



N

0' 1,000' 2,000'

Scale: 1"=2,000'

Note:
Base maps are the Dallas Store & Frier Ranch, New Mexico USGS 7.5 minute series topographic maps (1978)

Site Vicinity Map
Blackrock Oil
14 Miles West of Tatum, Lea County, New Mexico

Figure 1

#5321437
04/18/12

Revisions
By: _____ Date: _____ Descr.: _____
By: _____ Date: _____ Descr.: _____

Drawn CFK
Checked LNK
Approved KET

SMA
Engineering • Environmental Surveying

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www.soudermiller.com
Serving the Southwest & Rocky Mountains

N

0' 100' 200'

Scale: 1"=200'

Legend

- Approximate Site Boundary
- Oil and/or Gas Pipeline
- Overhead Electric Line

Note:
Aerial photograph obtained from Google Earth image dated 2011

Site Map w/ Utility Locations
Blackrock Oil
14 Miles West of Tatum, Lea County, New Mexico

Figure 2

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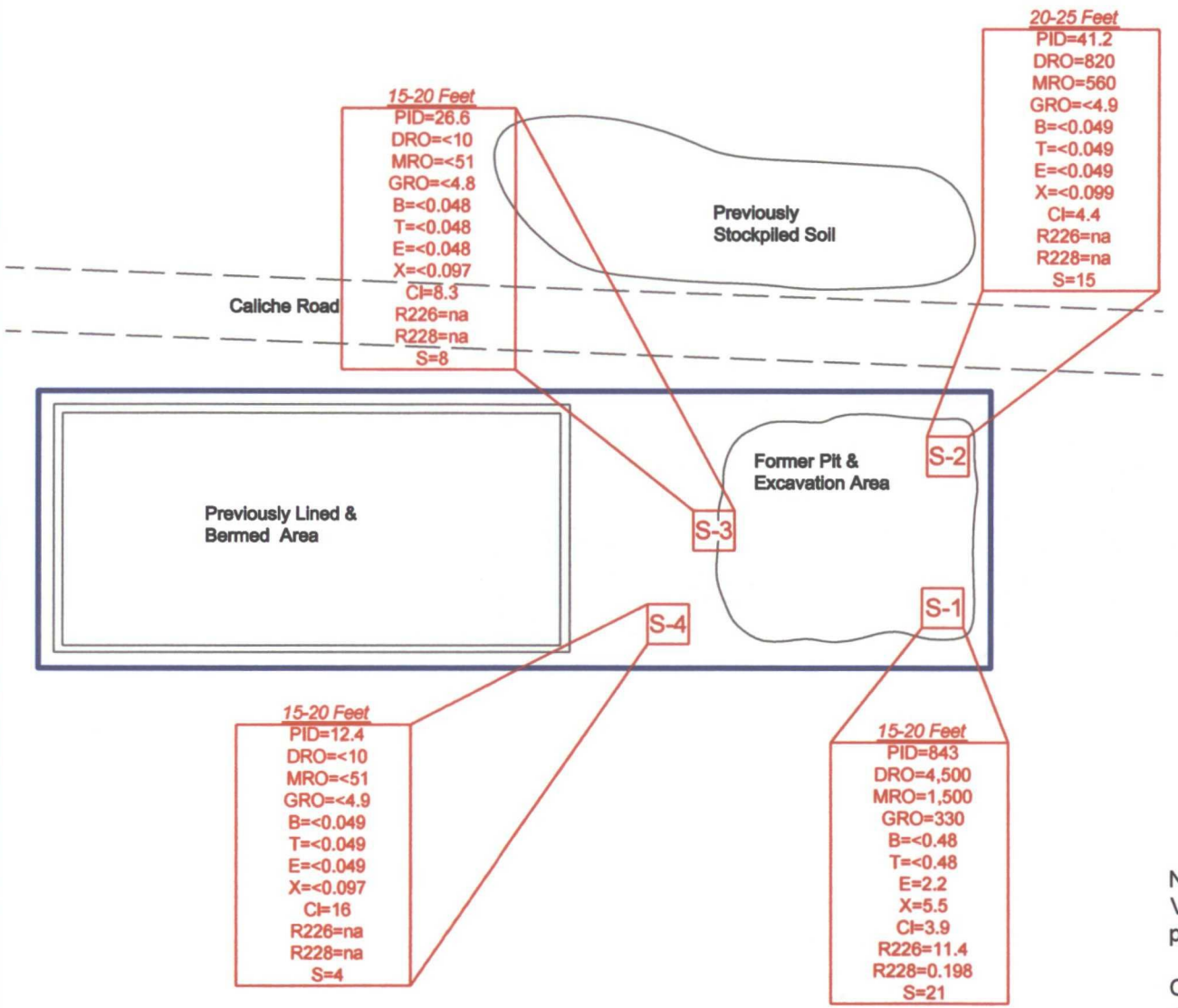

N

0' 25' 50'

Scale: 1"=50'

Legend

Approximate Site Boundary & Fenced Area

S-1 Pot-Hole Area

PID	Photo-ionization detector reading
DRO	Diesel range organics
MRO	Motor oil range organics
GRO	Gasoline range organics
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
Cl	Chloride
R226	Radium 226
R228	Radium 228
S	Scintillator reading

Notes:
Values represent maximum concentrations present in each pot-hole area over given interval.

Contaminant concentrations reported in mg/Kg except PID:ppmv, S:uR/h & R226/228:pCi/g.

Soil Contamination Concentration Map
Blackrock Oil
14 Miles West of Tatum, Lea County, New Mexico

Figure 3

#5321437
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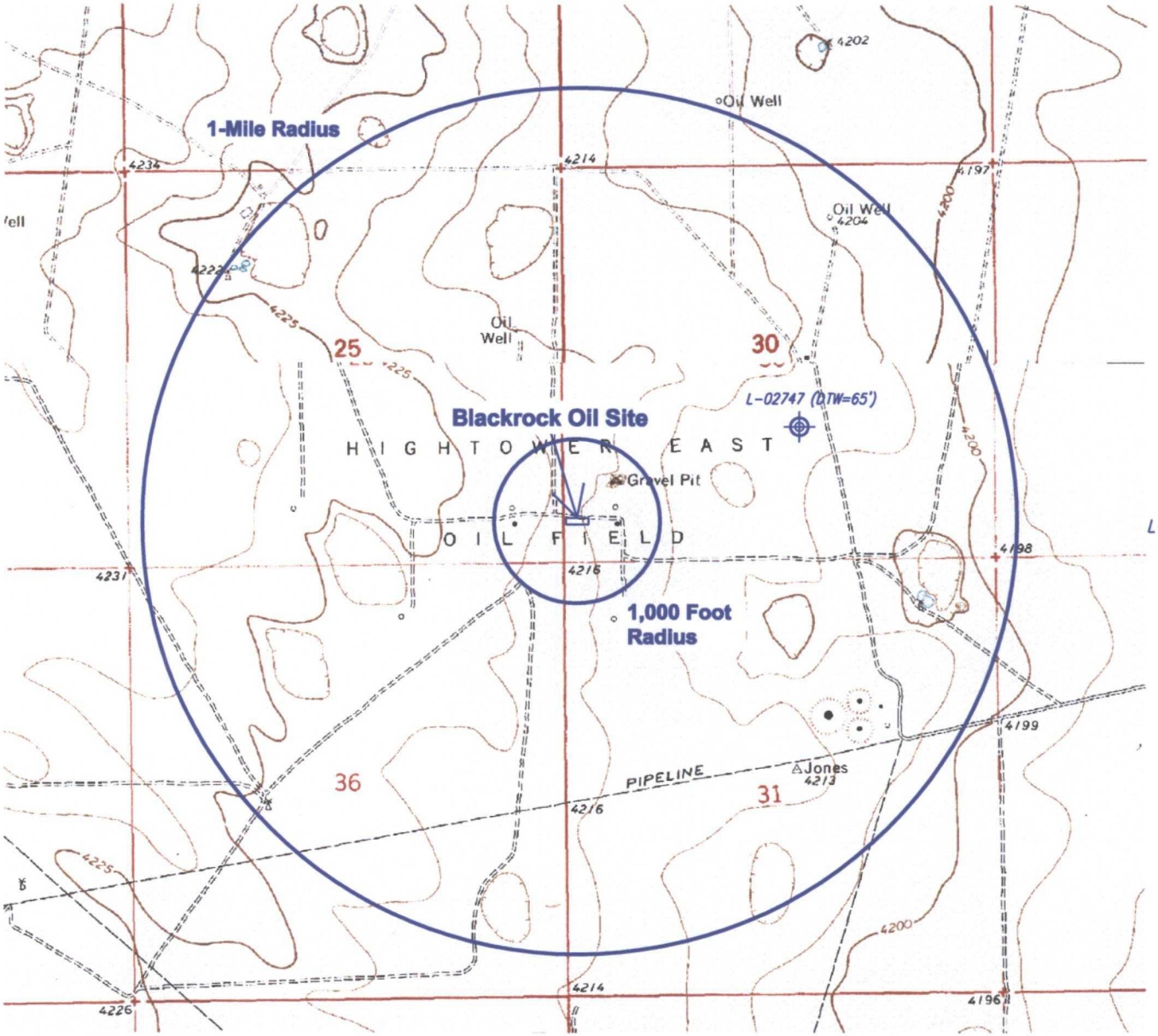

N

0' 1,000' 2,000'

Scale: 1"=2,000'

Legend

L-02747 (DTW=65')

Exploratory Well w/ NMOSE File Number & Depth to Water (DTW)

Note:
Base maps are the Dallas Store & Frier Ranch, New Mexico USGS 7.5 minute series topographic maps (1978)

Receptor Survey Map
Blackrock Oil
14 Miles West of Tatum, Lea County, New Mexico

Figure 4

#5321437
04/18/12

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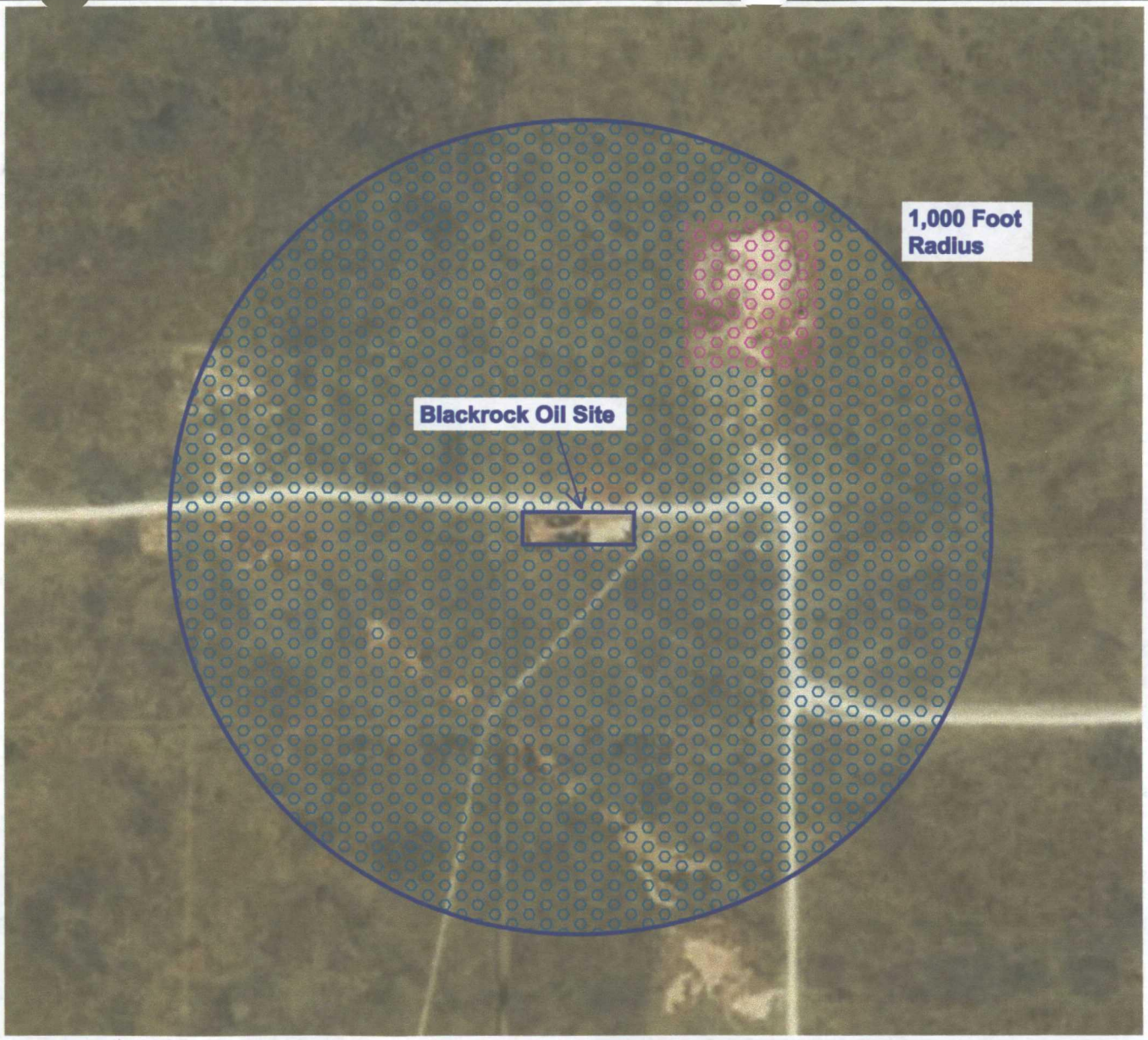

N

0' 200' 400'

Scale: 1"=400'

Legend

Gravel/Caliche Pit

Undeveloped Rangeland (NM State Land w/ Oil/Gas & Agricultural Leases)

Note:
Aerial photograph obtained from Google Earth image dated 2011

Land Use Map
Blackrock Oil
14 Miles West of Tatum, Lea County, New Mexico

Figure 5

#5321437
04/18/12

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Tables

Table 1
Soil Field Screening Results
Blackrock Oil
14 Miles West of Tatum, Lea County, New Mexico

Identification	Depth (feet)	PID Reading (ppmv)	Scintillator Reading (µR/hr)
Background	Surface	--	10
	Previous Excavation	--	24
S-1	10' (surface of previous excavation)	13.4	14
	15'	13.0	16
	17'	--	19
	20'	**843**	21
S-2	12' (surface of previous excavation)	--	12
	15'	25.1	12
	20'	39.2	15
	25'	41.2	13
S-3	Surface	--	12
	5'	9.6	9
	10'	20.7	7
	15'	26.6	8
	20'	5.7	6
S-4	Surface	--	5-9
	5'	10.8	6
	10'	14.3	5
	15'	12.4	4
	20'	8.7	4
Applicable Guideline/Standard		**100[1]**	**50[2]**

Notes:

1) [1] = New Mexico Petroleum Storage Tank Bureau (NMPSTB) guideline for petroleum release confirmation (*PSTB Guidelines for Corrective Action* , March 2000) and *NMOCD Guidelines for Remediation of Leaks, Spills & Releases* (August 1993)

2) [2] = New Mexico Radiation Control Bureau (NMRCB) standard for exempt NORM (20.3.14.1403 NMAC)

3) **red** = exceeds one or more published standard listed

Table 2
Soil Laboratory Analytical Results
Blackrock Oil
14 Miles West of Tatum, Lea County, New Mexico

Laboratory Results	Sample	S-1@15'	S-1@20'	S-2@20'	S-2@25'	S-3@15'	S-3@20'	S-4@15'	S-4@20'	NMOCD Standards		NORM Exemption Standard[3]
	Date	13-Mar-12	13-Mar-12	13-Mar-12	13-Mar-12	13-Mar-12	13-Mar-12	13-Mar-12	13-Mar-12			
	Type	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	(Permanent Pit Release Confirmation)[1]	(Remediation Guidelines, Site Rank=10)[2]	
	Depth	15'	20'	20'	25'	15'	20'	15'	20'			
Total Petroleum Hydrocarbons (mg/Kg)												
Diesel Range Organics		**740**	**4,500**	**820**	**390**	<10	<9.9	<10	<10	100	1,000	--
Motor Oil Range Organics		**2,100**	**1,500**	**560**	**<510**	<51	<49	<50	<51			--
Gasoline Range Organics		<4.7	**330**	<4.7	<4.9	<4.8	<4.7	<4.9	<4.9			--
BTEX & MTBE (mg/Kg)												
Benzene		<0.047	**<0.48**	<0.047	<0.049	<0.048	<0.047	<0.049	<0.049	Benzene = 0.2 BTEX = 50	Benzene = 10 BTEX = 50	--
Toluene		<0.047	<0.48	<0.047	<0.049	<0.048	<0.047	<0.049	<0.049			--
Ethylbenzene		<0.047	2.2	<0.047	<0.049	<0.048	<0.047	<0.049	<0.049			--
Total Xylenes		<0.095	5.5	<0.094	<0.099	<0.097	<0.093	<0.097	<0.097			--
Methyl Tert-Butyl Ether (MTBE)		<0.095	<0.96	<0.094	<0.099	<0.097	<0.093	<0.097	<0.097	--	--	--
Anions (mg/kg)												
Chloride		3.9	<1.5	4.4	2.8	8.3	6.8	16	11	250	--	--
Radionucleoids (pCi/g)												
Radium - 226		11.4	3.00	--	--	--	--	--	--	--	--	30
Radium - 228		0.0340	0.198	--	--	--	--	--	--	--	--	--

Notes:

1) [1] = New Mexico Oil Conservation Division (NMOCD) standard for permanent pit release confirmation (19.15.17.13.C.3 NMAC)

2) [2] = *NMOCD Guidelines for Remediation of Leaks, Spills & Releases* (August 1993)

3) [3] = New Mexico Radiation Control Bureau (NMRCB) standard for exempt NORM (20.3.14.1403 NMAC)

4) **red** = exceeds one or more published standard listed

Appendix A – Site Investigation Photographs

Site Investigation Report
Blackrock Oil State CY Lease Site
14 Miles West of Tatum, Lea County, New Mexico

Photograph #1: View of the site looking east, pipeline in foreground and overhead electric visible.

Photograph #2: View of pit remaining from previous excavation activities prior to disturbance.

Photograph #3: View of site with lined area installed for previous excavation activities in background, additional pipeline runs parallel to the south side of caliche road.

Photograph #4: View of lined area installed for previous excavation activities and previously stockpiled soil in background.

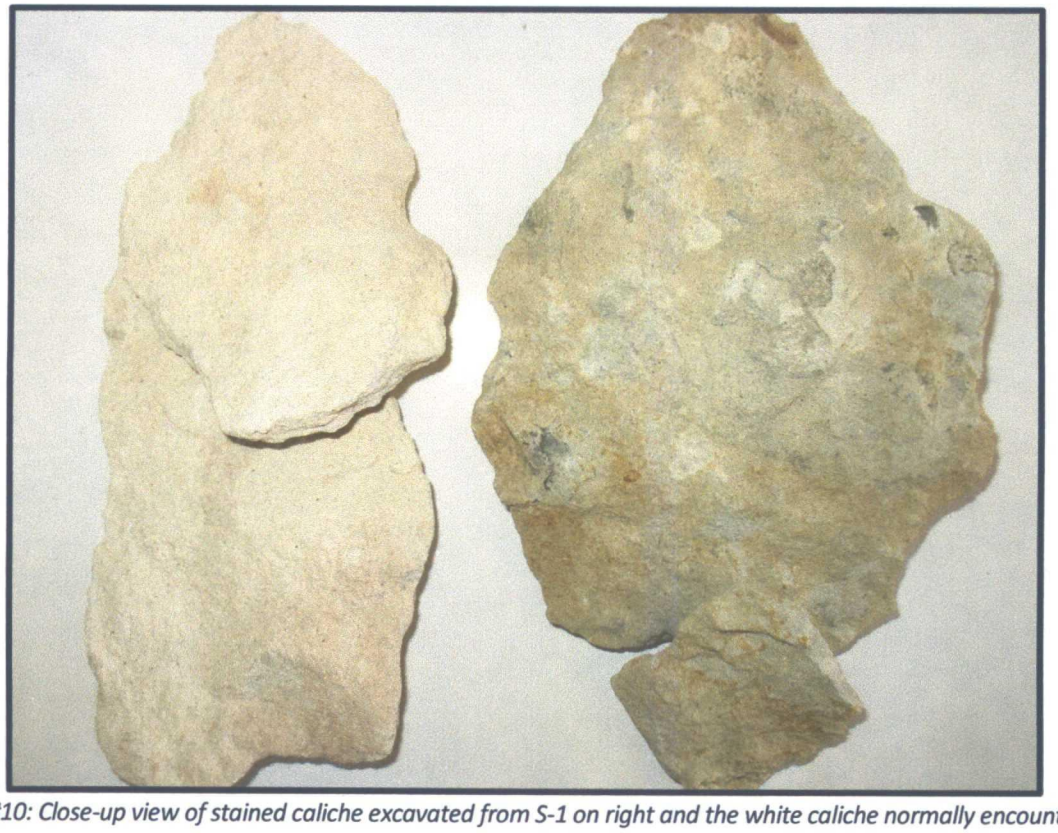
Photograph #5: View of excavator preparing site in order to access the southeast and previously most contaminated portion of the existing pit.

Photograph #6: Excavation of area in southeast corner of existing pit, identified as excavation area S-1.

Photograph #7: View of color change in excavation area S-1 at a depth of approximately 20 feet bgs.

Photograph #8: Additional view of excavation area S-1, excavator teeth having difficulty breaking up caliche

Photograph #9: Greyish material excavated from S-1, initially thought to possibly be grout from abandoned well but determined to be stained caliche as field PID readings indicated petroleum contamination.



Photograph #10: Close-up view of stained caliche excavated from S-1 on right and the white caliche normally encountered on left.

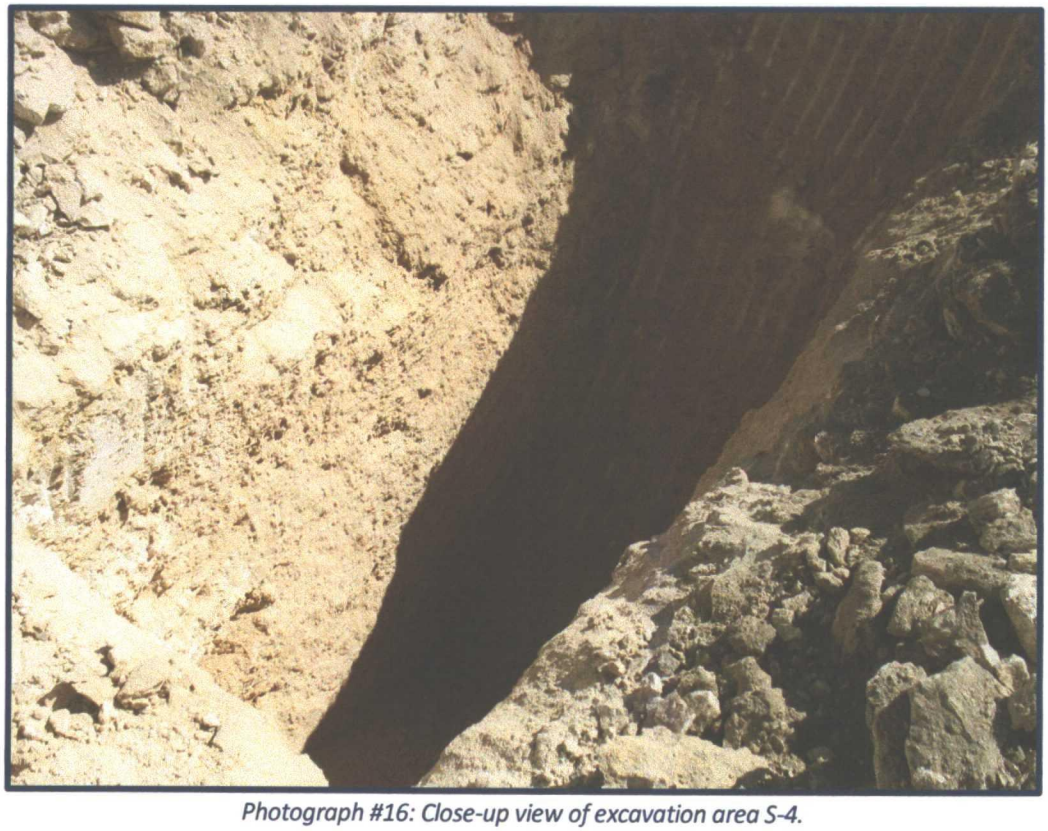
Photograph #11: Excavation of S-2 in the northeast corner of pit.

Photograph #12: Additional view of excavation area S-2

Photograph #13: Excavator starting to excavate S-3.

Photograph #14: View to the total depth of excavation area S-3

Photograph #15: Excavator starting to excavate S-4.



Photograph #16: Close-up view of excavation area S-4.

Photograph #17: Close-up of material excavated from pot-hole area S-4 with scintillator to left of excavator bucket.

Photograph #18: Excavator backfilling pot-hole area S-4.

Photograph #19: Benching and ramp construction of existing pit for added site safety and ingress/egress of any livestock that may get beyond the current fencing around the pit.

Photograph #20: Additional view of large pit benched, ramped and with netting added for additional visibility/safety.

Appendix B – Laboratory Analytical Report

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 17, 2012

Larry Kemp
Souder, Miller & Associates
401 17th St. Suite 4
Las Cruces, NM 88005
TEL: (575) 647-0799
FAX (575) 647-0680

RE: OCD Blackrock OrderNo.: 1203590

Dear Larry Kemp:

Hall Environmental Analysis Laboratory received 8 sample(s) on 3/15/2012 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Project: OCD Blackrock
Lab ID: 1203590-001 **Matrix:** SOIL

Client Sample ID: S-1 @ 15'
Collection Date: 3/13/2012 10:45:00 AM
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	740	97		mg/Kg	10	3/21/2012 9:38:53 AM
Motor Oil Range Organics (MRO)	2,100	490		mg/Kg	10	3/21/2012 9:38:53 AM
Surr: DNOP	0	77.4-131	S	%REC	10	3/21/2012 9:38:53 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/19/2012 1:07:46 PM
Surr: BFB	98.3	69.7-121		%REC	1	3/19/2012 1:07:46 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	3/19/2012 1:07:46 PM
Benzene	ND	0.047		mg/Kg	1	3/19/2012 1:07:46 PM
Toluene	ND	0.047		mg/Kg	1	3/19/2012 1:07:46 PM
Ethylbenzene	ND	0.047		mg/Kg	1	3/19/2012 1:07:46 PM
Xylenes, Total	ND	0.095		mg/Kg	1	3/19/2012 1:07:46 PM
Surr: 4-Bromofluorobenzene	97.1	80-120		%REC	1	3/19/2012 1:07:46 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	3.9	1.5		mg/Kg	1	3/19/2012 2:46:39 PM

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Project: OCD Blackrock
Lab ID: 1203590-002 **Matrix:** SOIL

Client Sample ID: S-1 @ 20'
Collection Date: 3/13/2012 11:00:00 AM
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	4,500	100		mg/Kg	10	3/20/2012 10:48:20 PM
Motor Oil Range Organics (MRO)	1,500	500		mg/Kg	10	3/20/2012 10:48:20 PM
Surr: DNOP	0	77.4-131	S	%REC	10	3/20/2012 10:48:20 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	330	48		mg/Kg	10	3/19/2012 1:36:40 PM
Surr: BFB	373	69.7-121	S	%REC	10	3/19/2012 1:36:40 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.96		mg/Kg	10	3/19/2012 1:36:40 PM
Benzene	ND	0.48		mg/Kg	10	3/19/2012 1:36:40 PM
Toluene	ND	0.48		mg/Kg	10	3/19/2012 1:36:40 PM
Ethylbenzene	2.2	0.48		mg/Kg	10	3/19/2012 1:36:40 PM
Xylenes, Total	5.5	0.96		mg/Kg	10	3/19/2012 1:36:40 PM
Surr: 4-Bromofluorobenzene	120	80-120		%REC	10	3/19/2012 1:36:40 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	ND	1.5		mg/Kg	1	3/19/2012 2:59:04 PM

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Project: OCD Blackrock
Lab ID: 1203590-003 **Matrix:** SOIL

Client Sample ID: S-2 @ 20'
Collection Date: 3/13/2012 11:40:00 AM
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	820	100		mg/Kg	10	3/20/2012 11:09:36 PM
Motor Oil Range Organics (MRO)	560	500		mg/Kg	10	3/20/2012 11:09:36 PM
Surr: DNOP	0	77.4-131	S	%REC	10	3/20/2012 11:09:36 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/19/2012 8:19:41 PM
Surr: BFB	94.0	69.7-121		%REC	1	3/19/2012 8:19:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.094		mg/Kg	1	3/19/2012 8:19:41 PM
Benzene	ND	0.047		mg/Kg	1	3/19/2012 8:19:41 PM
Toluene	ND	0.047		mg/Kg	1	3/19/2012 8:19:41 PM
Ethylbenzene	ND	0.047		mg/Kg	1	3/19/2012 8:19:41 PM
Xylenes, Total	ND	0.094		mg/Kg	1	3/19/2012 8:19:41 PM
Surr: 4-Bromofluorobenzene	97.8	80-120		%REC	1	3/19/2012 8:19:41 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	4.4	1.5		mg/Kg	1	3/19/2012 3:11:29 PM

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: S-2 @ 25'
Project: OCD Blackrock
Collection Date: 3/13/2012 11:55:00 AM
Lab ID: 1203590-004
Matrix: SOIL
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	390	100		mg/Kg	10	3/20/2012 11:30:54 PM
Motor Oil Range Organics (MRO)	ND	510		mg/Kg	10	3/20/2012 11:30:54 PM
Surr: DNOP	0	77.4-131	S	%REC	10	3/20/2012 11:30:54 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/19/2012 2:34:19 PM
Surr: BFB	94.9	69.7-121		%REC	1	3/19/2012 2:34:19 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.099		mg/Kg	1	3/19/2012 2:34:19 PM
Benzene	ND	0.049		mg/Kg	1	3/19/2012 2:34:19 PM
Toluene	ND	0.049		mg/Kg	1	3/19/2012 2:34:19 PM
Ethylbenzene	ND	0.049		mg/Kg	1	3/19/2012 2:34:19 PM
Xylenes, Total	ND	0.099		mg/Kg	1	3/19/2012 2:34:19 PM
Surr: 4-Bromofluorobenzene	96.3	80-120		%REC	1	3/19/2012 2:34:19 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	2.8	1.5		mg/Kg	1	3/19/2012 3:23:54 PM

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: S-3 @ 15'
Project: OCD Blackrock
Collection Date: 3/13/2012 1:20:00 PM
Lab ID: 1203590-005
Matrix: SOIL
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	3/20/2012 2:36:09 PM
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	3/20/2012 2:36:09 PM
Surr: DNOP	95.8	77.4-131		%REC	1	3/20/2012 2:36:09 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/19/2012 3:03:09 PM
Surr: BFB	93.7	69.7-121		%REC	1	3/19/2012 3:03:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/19/2012 3:03:09 PM
Benzene	ND	0.048		mg/Kg	1	3/19/2012 3:03:09 PM
Toluene	ND	0.048		mg/Kg	1	3/19/2012 3:03:09 PM
Ethylbenzene	ND	0.048		mg/Kg	1	3/19/2012 3:03:09 PM
Xylenes, Total	ND	0.097		mg/Kg	1	3/19/2012 3:03:09 PM
Surr: 4-Bromofluorobenzene	95.1	80-120		%REC	1	3/19/2012 3:03:09 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	8.3	1.5		mg/Kg	1	3/19/2012 3:36:19 PM

Qualifiers:

- */X Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Project: OCD Blackrock
Lab ID: 1203590-006 **Matrix:** SOIL

Client Sample ID: S-3 @ 20'
Collection Date: 3/13/2012 2:00:00 PM
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	3/20/2012 3:01:30 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	3/20/2012 3:01:30 PM
Surr: DNOP	92.8	77.4-131		%REC	1	3/20/2012 3:01:30 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/19/2012 3:31:56 PM
Surr: BFB	92.7	69.7-121		%REC	1	3/19/2012 3:31:56 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.093		mg/Kg	1	3/19/2012 3:31:56 PM
Benzene	ND	0.047		mg/Kg	1	3/19/2012 3:31:56 PM
Toluene	ND	0.047		mg/Kg	1	3/19/2012 3:31:56 PM
Ethylbenzene	ND	0.047		mg/Kg	1	3/19/2012 3:31:56 PM
Xylenes, Total	ND	0.093		mg/Kg	1	3/19/2012 3:31:56 PM
Surr: 4-Bromofluorobenzene	95.6	80-120		%REC	1	3/19/2012 3:31:56 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	6.8	1.5		mg/Kg	1	3/19/2012 3:48:44 PM

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: S-4 @ 15'
Project: OCD Blackrock
Collection Date: 3/13/2012 3:25:00 PM
Lab ID: 1203590-007
Matrix: SOIL
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	3/20/2012 3:26:52 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	3/20/2012 3:26:52 PM
Surr: DNOP	93.5	77.4-131		%REC	1	3/20/2012 3:26:52 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/19/2012 4:00:40 PM
Surr: BFB	92.9	69.7-121		%REC	1	3/19/2012 4:00:40 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/19/2012 4:00:40 PM
Benzene	ND	0.049		mg/Kg	1	3/19/2012 4:00:40 PM
Toluene	ND	0.049		mg/Kg	1	3/19/2012 4:00:40 PM
Ethylbenzene	ND	0.049		mg/Kg	1	3/19/2012 4:00:40 PM
Xylenes, Total	ND	0.097		mg/Kg	1	3/19/2012 4:00:40 PM
Surr: 4-Bromofluorobenzene	96.9	80-120		%REC	1	3/19/2012 4:00:40 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	16	1.5		mg/Kg	1	3/19/2012 4:01:09 PM

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: S-4 @ 20'
Project: OCD Blackrock
Collection Date: 3/13/2012 3:45:00 PM
Lab ID: 1203590-008
Matrix: SOIL
Received Date: 3/15/2012 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE ORGANICS						Analyst: **JMP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	3/20/2012 3:52:29 PM
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	3/20/2012 3:52:29 PM
Surr: DNOP	92.7	77.4-131		%REC	1	3/20/2012 3:52:29 PM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/19/2012 4:29:23 PM
Surr: BFB	93.5	69.7-121		%REC	1	3/19/2012 4:29:23 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/19/2012 4:29:23 PM
Benzene	ND	0.049		mg/Kg	1	3/19/2012 4:29:23 PM
Toluene	ND	0.049		mg/Kg	1	3/19/2012 4:29:23 PM
Ethylbenzene	ND	0.049		mg/Kg	1	3/19/2012 4:29:23 PM
Xylenes, Total	ND	0.097		mg/Kg	1	3/19/2012 4:29:23 PM
Surr: 4-Bromofluorobenzene	97.9	80-120		%REC	1	3/19/2012 4:29:23 PM
EPA METHOD 300.0: ANIONS						Analyst: **BRM**
Chloride	11	1.5		mg/Kg	1	3/19/2012 4:38:24 PM

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

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(724)850-5600

ANALYTICAL RESULTS

Project: 1203590
Pace Project No.: 3065581

Sample: 120590-001B S-1 @15' **Lab ID: 3065581001** Collected: 03/13/12 10:45 Received: 03/21/12 10:00 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1m	**11.4 ± 0.711 (0.181)**	pCi/g	04/15/12 11:27	13982-63-3	
Radium-228	EPA 901.1m	**0.0340 ± 0.235 (0.413)**	pCi/g	04/15/12 11:27	15262-20-1	

Sample: 120590-002B S-1 @20' **Lab ID: 3065581002** Collected: 03/13/12 11:00 Received: 03/21/12 10:00 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1m	**3.00 ± 0.390 (0.510)**	pCi/g	04/15/12 13:29	13982-63-3	
Radium-228	EPA 901.1m	**0.198 ± 0.169 (0.322)**	pCi/g	04/15/12 13:29	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
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QUALITY CONTROL DATA

Project: 1203590
Pace Project No.: 3065581

QC Batch: RADC/11466 Analysis Method: EPA 901.1m
QC Batch Method: EPA 901.1m Analysis Description: 901.1 Gamma Spec
Associated Lab Samples: 3065581001, 3065581002

METHOD BLANK: 420682 Matrix: Solid
Associated Lab Samples: 3065581001, 3065581002

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-226	0.0330 ± 0.0640 (0.121)	pCi/g	04/16/12 08:25	
Radium-228	0.000 ± 0.104 (0.196)	pCi/g	04/16/12 08:25	

REPORT OF LABORATORY ANALYSIS

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1203590**

17-Apr-12

C Souder, Miller & Associates

Project: OCD Blackrock

Sample ID	MB-1131	SampType:	MBLK		TestCode:	EPA Method 300.0: Anions				
Client ID:	PBS	Batch ID:	1131		RunNo:	1555				
Prep Date:	3/19/2012	Analysis Date:	3/19/2012		SeqNo:	43744	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-1131	SampType:	LCS		TestCode:	EPA Method 300.0: Anions				
Client ID:	LCSS	Batch ID:	1131		RunNo:	1555				
Prep Date:	3/19/2012	Analysis Date:	3/19/2012		SeqNo:	43745	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.8	90	110			

Sample ID	1203590-007AMS	SampType:	MS		TestCode:	EPA Method 300.0: Anions				
Client ID:	S-4 @ 15'	Batch ID:	1131		RunNo:	1555				
Prep Date:	3/19/2012	Analysis Date:	3/19/2012		SeqNo:	43763	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	29	1.5	15.00	16.44	84.0	74.6	118			

Sample ID	1203590-007AMSD	SampType:	MSD		TestCode:	EPA Method 300.0: Anions				
Client ID:	S-4 @ 15'	Batch ID:	1131		RunNo:	1555				
Prep Date:	3/19/2012	Analysis Date:	3/19/2012		SeqNo:	43764	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	29	1.5	15.00	16.44	83.1	74.6	118	0.424	20	

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1203590

17-Apr-12

C.. ..: Souder, Miller & Associates

Project: OCD Blackrock

Sample ID	MB-1130	SampType:	MBLK	TestCode:	EPA Method 8015B: Diesel Range Organics				
Client ID:	PBS	Batch ID:	1130	RunNo:	1561				
Prep Date:	3/19/2012	Analysis Date:	3/20/2012	SeqNo:	43967	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.2		10.00		92.4	77.4	131			

Sample ID	LCS-1130	SampType:	LCS	TestCode:	EPA Method 8015B: Diesel Range Organics				
Client ID:	LCSS	Batch ID:	1130	RunNo:	1561				
Prep Date:	3/19/2012	Analysis Date:	3/20/2012	SeqNo:	43969	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.6	62.7	139			
Surr: DNOP	5.0		5.000		99.2	77.4	131			

Q rs:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1203590**

17-Apr-12

Client: Souder, Miller & Associates

Project: OCD Blackrock

Sample ID	MB-1121	SampType:	MBLK		TestCode:	EPA Method 8015B: Gasoline Range				
Client ID:	PBS	Batch ID:	1121		RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012		SeqNo:	43802	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	940		1,000		93.6	69.7	121			

Sample ID	LCS-1121	SampType:	LCS		TestCode:	EPA Method 8015B: Gasoline Range				
Client ID:	LCSS	Batch ID:	1121		RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012		SeqNo:	43803	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	113	98.5	133			
Surr: BFB	1,000		1,000		101	69.7	121			

Sample ID	1203602-001AMS	SampType:	MS		TestCode:	EPA Method 8015B: Gasoline Range				
Client ID:	BatchQC	Batch ID:	1121		RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012		SeqNo:	43815	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.6	23.08	0	103	85.4	147			
Surr: BFB	920		923.4		100	69.7	121			

Sample ID	1203602-001AMSD	SampType:	MSD		TestCode:	EPA Method 8015B: Gasoline Range				
Client ID:	BatchQC	Batch ID:	1121		RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012		SeqNo:	43816	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.7	23.34	0	108	85.4	147	5.29	19.2	
Surr: BFB	940		933.7		101	69.7	121	0	0	

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1203590

17-Apr-12

Client: Souder, Miller & Associates

Project: OCD Blackrock

Sample ID	MB-1121	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles				
Client ID:	PBS	Batch ID:	1121	RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012	SeqNo:	43819	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.97		1.000		97.3	80	120			

Sample ID	LCS-1121	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles				
Client ID:	LCSS	Batch ID:	1121	RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012	SeqNo:	43820	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.86	0.10	1.000	0	86.5	65.5	229			
Benzene	0.92	0.050	1.000	0	92.4	83.3	107			
Toluene	0.95	0.050	1.000	0	94.8	74.3	115			
Ethylbenzene	0.94	0.050	1.000	0	94.3	80.9	122			
Xy[illegible] Total	2.8	0.10	3.000	0	94.1	85.2	123			
Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID	1203590-001AMS	SampType:	MS	TestCode:	EPA Method 8021B: Volatiles				
Client ID:	S-1 @ 15'	Batch ID:	1121	RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012	SeqNo:	43832	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.79	0.093	0.9276	0	84.9	61.3	215			
Benzene	0.81	0.046	0.9276	0	87.3	67.2	113			
Toluene	0.82	0.046	0.9276	0	88.7	62.1	116			
Ethylbenzene	0.84	0.046	0.9276	0.007486	89.9	67.9	127			
Xylenes, Total	2.5	0.093	2.783	0.01869	89.9	60.6	134			
Surr: 4-Bromofluorobenzene	0.96		0.9276		103	80	120			

Sample ID	1203590-001AMSD	SampType:	MSD	TestCode:	EPA Method 8021B: Volatiles				
Client ID:	S-1 @ 15'	Batch ID:	1121	RunNo:	1558				
Prep Date:	3/16/2012	Analysis Date:	3/19/2012	SeqNo:	43833	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.80	0.095	0.9515	0	83.6	61.3	215	0.952	19.6	
Benzene	0.82	0.048	0.9515	0	86.4	67.2	113	1.52	14.3	
Toluene	0.84	0.048	0.9515	0	88.4	62.1	116	2.22	15.9	
Ethylbenzene	0.85	0.048	0.9515	0.007486	88.2	67.9	127	0.628	14.4	
Xylenes, Total	2.5	0.095	2.854	0.01869	88.5	60.6	134	0.982	12.6	
Surr: 4-Bromofluorobenzene	0.95		0.9515		100	80	120	0	0	

Qualifiers:

*/X	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: SMA-LC Work Order Number: 1203590

Received by/date: AG 03/15/12

Logged By: **Ashley Gallegos** 3/15/2012 9:45:00 AM

Completed By: **Anne Thorne** 3/15/2012

Reviewed By: 03/16/12

Chain of Custody

1. Were seals intact? Yes ☑ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? UPS

Log In

4. Coolers are present? (see 19. for cooler specific information) Yes ☑ No ☐ NA ☐
5. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
6. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
7. Sample(s) in proper container(s)? Yes ☑ No ☐
8. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
9. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
10. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
11. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
12. Were any sample containers received broken? Yes ☐ No ☑
13. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
14. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
15. Is it clear what analyses were requested? Yes ☑ No ☐
16. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

17. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

18. Additional remarks:

19. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Yes			

Chain-of-Custody Record

Client: Souder, Miller + Assoc.

Mailing Address: 401 N 17th St, Ste 4
LC NM 88005

Phone #: (575) 647-0799

email or Fax#: larry.kemp@soudermiller.com

QA/QC Package:
[X] Standard ☐ Level 4 (Full Validation)

Accreditation
[X] NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
[X] Standard ☐ Rush

Project Name: OCD Blackrock

Project #: 532437.1.2

Project Manager: LKemp

Sampler: LKemp

On Ice: [X] Yes ☐ No

Sample Temperature: 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1205970	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	EPA E903.0/E904.0				Air Bubbles (Y or N)
3/13/12 LK	1045	soil	S-1@15'	4oz jar/2	N/A	-001	X		X					X								
3/13/12	1100		S-1@20'			-002	X		X					X								
	1140		S-2@20'			-003	X		X					X								
	1155		S-2@25'			-004	X		X					X								
	1320		S-3@15'			-005	X		X					X								
	1400		S-3@20'			-006	X		X					X								
	1525		S-4@15'			-007	X		X					X								
	1545		S-4@20'			-008	X		X					X								
	1045		S-1@15'			-001												X				
	1100		S-1@20'			-002												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/14/12	1730				
Date:	Time:	Relinquished by:	Received by:	03/15/12	0945

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix C – Health & Safety Plan

SITE HEALTH AND SAFETY PLAN

Location:

Blackrock Oil Site
Lea County
New Mexico

PREPARED FOR:

Energy, Minerals and Natural Resources Division (EMNRD)
Oil Conservation Division (OCD)
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

PREPARED BY:
Souder, Miller & Associates (SMA)
401 N. Seventeenth Street
Las Cruces, New Mexico
(575) 647-0799

DATE: February 24, 2012

TABLE OF CONTENTS

The purpose of the Health and Safety Plan (HASP) is to identify health and safety risks associated with performing a site investigation of petroleum contamination and naturally occurring radioactive materials (NORM) at the Blackrock Oil site located in Lea County, New Mexico.

I. PROJECT INFORMATION

PROJECT NAME: Blackrock Oil

PROJECT TEAM LEADER: Karl Tonander Phone: (575) 647-0799

PROJECT MANAGER: Clay Kiesling Phone: (575) 647-0799

FIELD TEAM: Larry Kemp Phone: (575) 647-0799

FEDERAL AGENCIES: N/A

STATE AGENCIES: Energy, Minerals and Natural Resources (EMNRD) Oil Conservation Divisions (OCD) – Mr. Jim Griswold (505) 476-3465

II. SITE DESCRIPTION

PROJECT DATE(S): March 12, 2012

PROJECT LOCATION(S): Southwest ¼ of Section 30, Township 12S, Range 34E in Lea County, New Mexico and approximately 14 miles west of Tatum, New Mexico.

HAZARDS: Potential hazards include; radiation exposure from naturally occurring radioactive materials (NORM), petroleum contamination, open pit, open pot-holes and heavy equipment operations.

AREA AFFECTED: Immediate area surrounding the Blackrock Oil site

III. DESCRIPTION OF POTENTIAL HAZARDS & MITIGATION MEASURES

Radiation-NORM

Naturally Occurring Radioactive Materials (NORM) are being measured as a part of the field investigation. Alpha, beta and gamma particles are the types of radioactive particles that one can be exposed to. Exposure to alpha and beta particles are generally through inhalation and ingestion. Gamma rays can pass directly through the body and shielding and distance are the only effective methods of limiting gamma ray exposure. The annual occupational dose limit is five (5) Rems. Acute doses less than 25 Rems show no clinical effects. Nausea and fatigue occur over 100 Rems.

A Ludlum Model 19 Micro-R meter will be used for the collection of radiological data. The meter has a scale based on microroentgen/hour (uR/hr). **Counts approaching 10,000 uR/hr (approx. 0.0087 Rems/hr) will require a worker to leave that location**, per New Mexico Environment Department Radiation Control Bureau (NMED-RCB) recommendations.

Petroleum Contamination

Petroleum contamination is an eye and throat irritant at levels around the Permissible Exposure Limit (PEL) of 300 ppm and can cause narcotic effects (with symptoms including headache, nausea, dizziness and blurred vision) at higher levels. Long term exposure can affect liver and kidney function and some studies indicate a potential for petroleum contaminants to be an animal carcinogen. Because petroleum contamination can be a mixture of various hydrocarbons, a mean odor threshold has not been determined.

A photoionization detector (PID) will be used to determine hydrocarbon contamination in the soil as well as monitor ambient levels in the work area. Protective nitrile gloves will be used when sampling petroleum contaminated soil and eating or drinking in the work area will not be allowed in order to minimize ingestion. Whenever possible, work will be performed upwind of any excavations and if air monitoring indicates levels approaching the PEL, the work area will be evacuated and inhalation risks will be reevaluated.

Open Pit & Pot-Holes

Investigation of the Blackrock Oil site includes the additional excavation of the existing open pit as well as the excavation of multiple pot-holes throughout the site using an excavator. Personnel should, whenever possible, work on the upwind side of excavation areas. Should air quality monitoring indicate elevated levels of hazardous vapors or naturally occurring radioactive material (NORM), the work area will be evacuated. An evaluation of increased level of protection (e.g., respiratory protection) will be performed prior to work area re-entry. A confined space permit is necessary for entry into the excavation pit and personnel will not enter the put or any pot-hole location. All soil sampling will be performed from soils excavated from the pit/pot-holes and placed on ground surface. Personnel should at all times remain a safe distance from the edge of any excavation in the event of slope failure.

Heavy Equipment Operation

Investigation of the Blackrock Oil site requires the use of a track mounted excavator. Hearing protection will be used around equipment as needed (normal conversation not possible). When approaching heavy equipment, be visible to the operator and make eye contact before approaching. High visibility traffic vests or other brightly clothing will be worn by all field personnel working near heavy equipment.

IV. PERSONAL PROTECTIVE EQUIMENT (PPE)

PPE for the site investigation should include at a minimum: nitrile gloves, steel-toe boots, and orange traffic vests or other brightly colored clothing.

V. KEY PERSONNEL

The following outlines the key personnel and their responsibilities:

Project Manager:	Clay Kiesling Souder, Miller & Associates Las Cruces, NM (575) 647-0799
Field Team Leader:	Larry Kemp Souder, Miller & Associates Las Cruces, NM (575) 647-0799

The Field Team Leader will function as the Site Health & Safety Officer and Site Supervisor.

Tailgate safety meetings will be held and all personnel will be briefed on the contents of this plan prior to initiating any efforts. Tailgates will also cover any safety and/or health issues not anticipated or addressed in this plan. The Field Team Leader will be responsible for briefing and record keeping.

VI. COMMUNICATION PROCEDURES

Radio communication is not anticipated to be essential for this project. The Field Team Leader should remain visible to the heavy equipment operator throughout the pot-holing investigation of the site.

The following standard hand signals will be used:

Hand gripping throat	Out of air, can't breathe
Grip partner's wrist or both hands around waist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	OK, I'm all right, I understand
Thumbs down	NO, Negative

Others as needed while handling, moving, or loading materials, are acceptable provided that all personnel involved agree to their meaning.

Telephone communication will be available by mobile phone as allowed by reception in the area.

VII. CONTINGENCIES

FIRST AID MEASURES/MEDICAL EMERGENCIES

The nearest hospital is the Nor-Lea General Hospital located in Lovington, New Mexico. A map to the nearest hospital is attached to this HASP.

PHONE LIST:

AMBULANCE	911
POLICE, FIRE & RESCUE	911
HOSPITAL (Nor-Lea General)	(575) 396-6611
STATE POLICE (Hobbs, NM)	(575) 392-5580
POISON CONTROL	1-800-362-0101
CHEMTREC	1-800-424-8802

First aid and emergency fire equipment will be available in SMA's vehicle.

Emergency Procedures

The following standard emergency procedures will be used by on site personnel. The Site Safety Officer shall be notified of any on site emergencies and be responsible for ensuring that the appropriate procedures are followed.

Upon notification of an injury, the Project Team Leader and Site Safety Officer will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of remaining personnel, operations may continue. If the injury increases the risk to others, the personnel will be directed to return to the designated home office.

In any case, the appropriate first aid will be initiated and necessary follow-up as stated above.

Fire / Explosion:

Upon notification of a fire or explosion on site, the designated emergency signal shall be sounded and all site personnel assembled at a location determined prior to commencement of field work. The fire department shall be alerted and all personnel moved to a safe distance from the involved area. *Fire extinguishers shall be used with discretion to minimize the risk of fire*

and explosion that would result in injuries.

In all situations, when an on-site emergency results in evacuation, personnel shall not reenter until:

1. The hazards have been reassessed.
2. The conditions resulting in the emergency have been corrected.
3. The Site Safety Plan has been reviewed.
4. Site personnel have been briefed on any changes in the Site Safety Plan.

VIII. CLOSURES AND SIGNATURES

This plan has been reviewed and has the full approval of the following Management.

Owner:

NAME:_____
TITLE:_____
DATE:_____

Consultant: ***Souder, Miller & Associates***

NAME:_____
TITLE:_____
DATE:_____

Subcontractor: **Gandy-Marley, Inc.**

NAME:_____
TITLE:_____
DATE:_____

All site personnel have read the above plan and are familiar with its provisions.

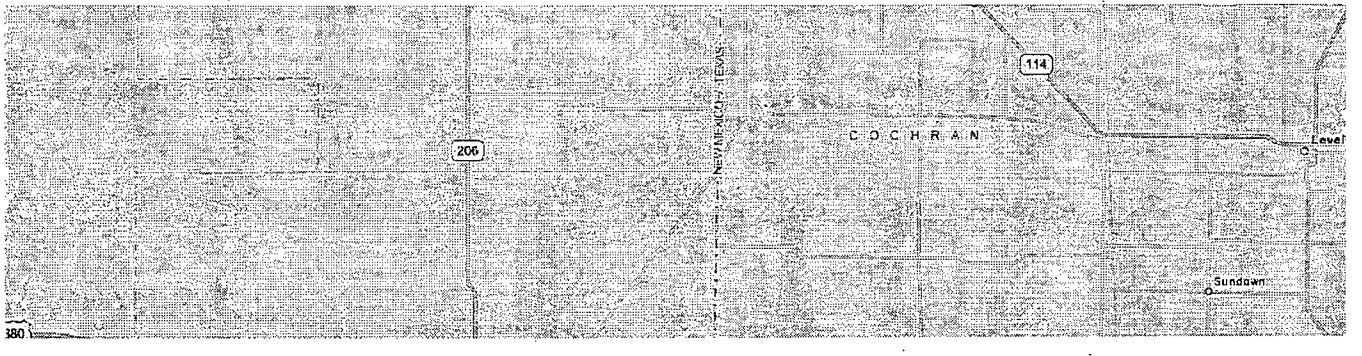
	Print Name	Signature
Site Safety Officer		
Field Team Leader		
Other Site Personnel		

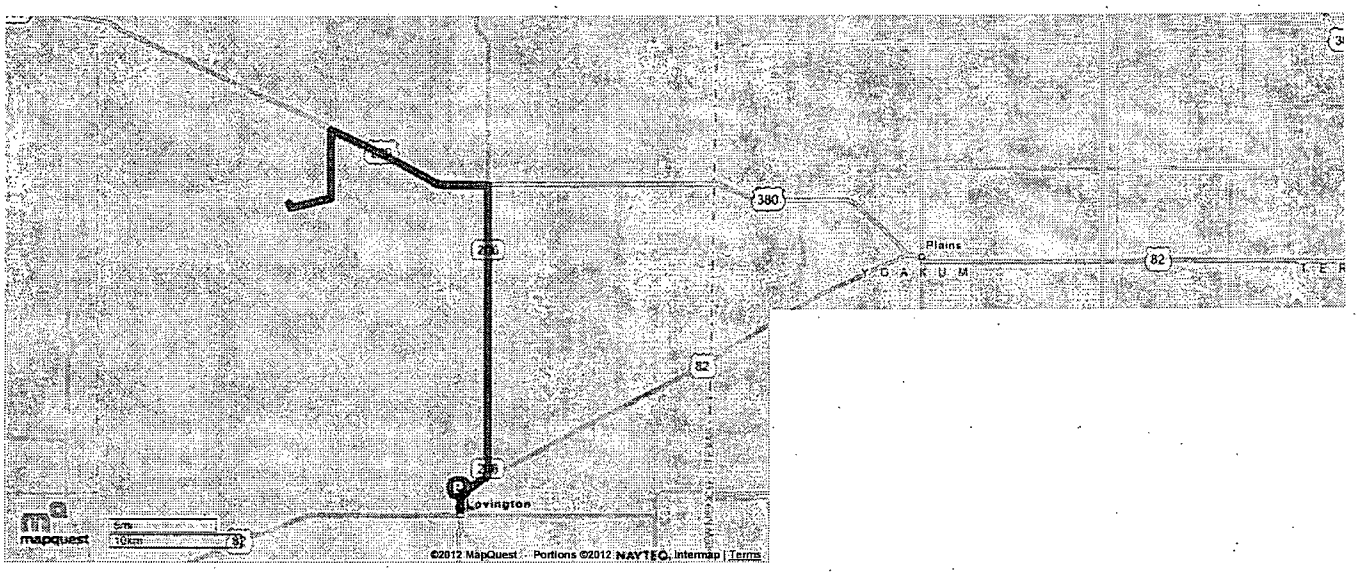
mapquest

Trip to:

Lea County Indigent Hospital Claim
100 N Main Ave # 11
Lovington, NM 88260
(575) 396-8521
60.18 miles / 1 hour 37 minutes
Notes

A	**Tatum, NM**	
1. Start out going **northwest** on **US-380 / W Broadway St** toward **N Avenue A**. Continue to follow **US-380**. Map		**11.3 Mi** *11.3 Mi Total*
2. Turn **left** onto **CR-151** (Portions unpaved). Map *If you reach CR-161 you've gone a little too far*		**4.5 Mi** *15.8 Mi Total*
3. Turn **right** (Portions unpaved). Map *0.8 miles past Chameleon Rd* *If you reach CR-152 you've gone about 2.6 miles too far*		**3.1 Mi** *18.9 Mi Total*
4. Go **straight** (Portions unpaved). Map		**0.04 Mi** *19.0 Mi Total*
5. Take the 1st **right** (Portions unpaved). Map		**3.1 Mi** *22.0 Mi Total*
6. Turn **left** onto **CR-151 / Simonola Valley Rd**. Continue to follow **CR-151** (Portions unpaved). Map		**4.5 Mi** *26.6 Mi Total*
7. Turn **right** onto **US-380**. Map		**11.3 Mi** *37.9 Mi Total*
8. Turn **right** onto **S Main St / NM-206**. Continue to follow **NM-206 S**. Map *NM-206 S is just past S Avenue A* *If you reach S Anderson Ave you've gone a little too far*		**19.0 Mi** *56.9 Mi Total*
9. Merge onto **US-82 W** toward **Lovington**. Map		**3.3 Mi** *60.2 Mi Total*
10. **100 N MAIN AVE # 11**. Map *Your destination is just past W Washington Ave* *If you are on S Main St and reach E Avenue A you've gone a little too far*		
B	**Lea County Indigent Hospital Claim** 100 N Main Ave # 11, Lovington, NM 88260 (575) 396-8521	





Appendix D – Field Notes

OCD Blackrock Site 13Mar12 1/5

* on site @ 0830, met w/ Mr. Frier & Gandy Marley operator

* 0845 met w/ GM super Rick Dunlap & operator Jose, spotted utilities & discussed previous work at site

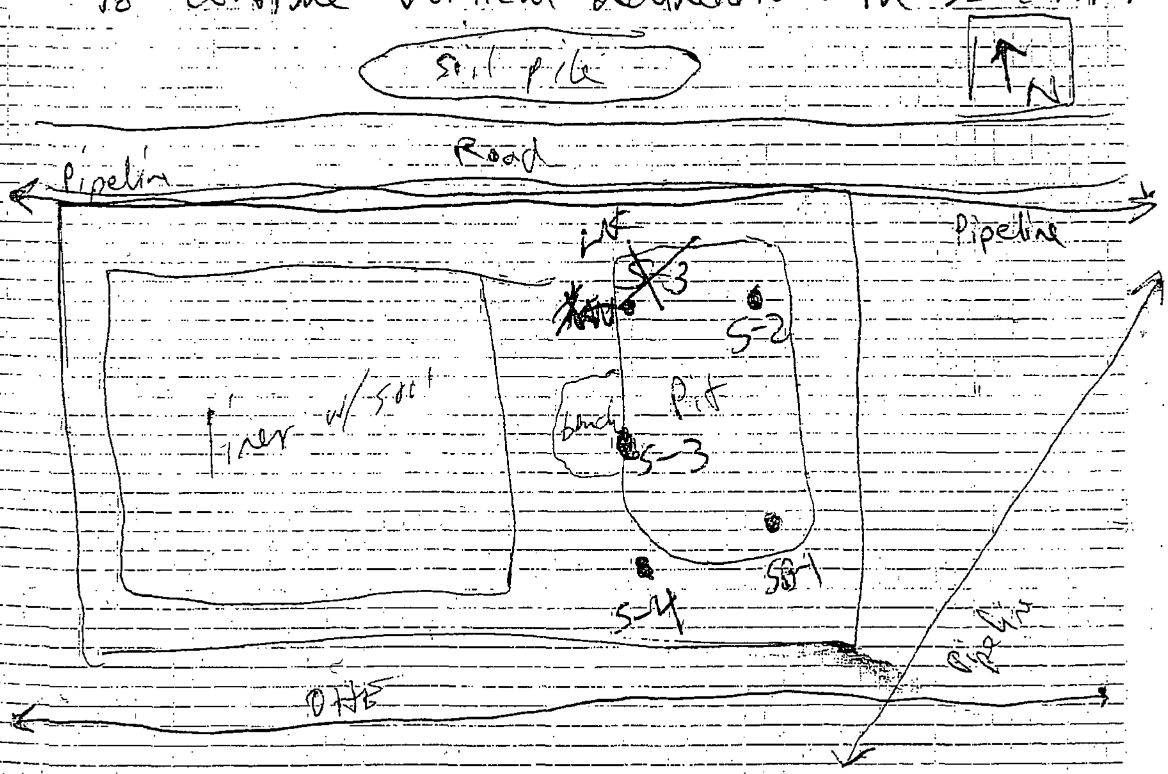
* Current pit ≈ 12' deep

* Background Readings: Ludlum Model 19 Scintillator Calibration: 1/26/12

surface: 10 μR/hr

pit: 24 μR/hr

* HASP @ 0920, begin benching @ 0930 to continue vertical delineation in SE corner



OCD
Black Rock Site 13 Mar 12 2/5

* 1015 — ~17' bgs, encountered cemented soil layer, gray, mild odor. Soils from ~10-17', unconsolidated brown loamy sand/clay, no odor

* Scintillator, Ludlum Model #9, calibrated 1/26/12 used to record μR/hr

Readings 10' bgs: 14 μR/hr, 15' bgs: 16 μR/hr, for S-1 17' bgs, 19 μR/hr (gray, cemented sand, semi-consolidated (mild petroleum odor)), 20' bgs: 21 μR/hr

S-1 PID Headspace: NB - 17-20' stained caliche, dense
@10' — 13.4 ppm, no odor
@15' — 13.0 ppm, no odor
LN ~~@20'~~
* @20' — 843 ppm, petroleum/gasoline odor
Sample

* S-2 @ 1110, bench to reach excavation point, beginning depth ~12', use "clean" soil to backfill S-1.
* Scintillator @ background of 11 μR/hr @ ~12'

S-2 Field Screening

Depth	PID	Scintillator	Notes
15'	28.1 ppm	12 μR/hr	No HC odor
* 20'	39.2 ppm	15 μR/hr	No HC odor
* 25'	41.2 ppm	13 μR/hr	No HC odor

Sample

OCD Blackrock site 13 Mar 12 3/5

* S-2 soils → brown/tan clay loam w/caliche, fractured, weathered caliche layer ≈ 20' bgs, no petroleum odor or visible staining
* S-2 > ≈20-25', brown/tan caliche, dense, edge of stained caliche visible near S-1 side of pit.
* 1209 > break for lunch, back on S-3 @1234

S-3 Field Screening

Depth	PID	Scintillator	Notes
5'	9.6ppm	9.4μR/hr	No odor, red/cream caliche, clay loam
10'	~~20.7ppm~~	7μR/hr	" " " "
*15'	26.6ppm	8μR/hr	No odor, dense red/brown caliche
*20' sample	5.7ppm	6μR/hr	No odor, dense caliche

* 1255 - scintillator background @ S-3 = 12.4μR/hr
* S-3 ≈ 15' bgs dense caliche
* 1400 > move HC impacted soil to liner, prep S-4 area
* 1425 - 1435 > break time!
* 1435 begin S-4

OCD Blackrock Site — 13 Mar 12 — 4/5

* Call SMALCO @ 1345, contact OCD ~ 1400 w/ updates

S-4 Field Screening * Background near S-4 ~ S-9 uR/hr

Depth	PID	Scintillator	Notes
5'	10.8 ppm No odor	6uR/hr	Dense caliche 0-2' bgs, Red/cream clay/sand loam
10'	14.3 ppm No HC odor	5uR/hr	Red/cream loam soil w/caliche unconsolidated
Sample #1 15'	12.4 ppm No odor	4uR/hr	Dense tan sand/caliche No odor or visual impact
~20'	8.7 ppm No odor	4uR/hr	

* Very dense sand/caliche layer from ~15' to 20' bgs @ S-4

* 1550 > begin backfill S-4, smooth out backfill in pit, complete moving impacted soil to liner area & thin spread

* Only area of visual/odor impact in S-1 @ 15'-23' bgs.

* Reset fencing across pit.

* Gandy Marley off-site @ 1710

OCD Blackrock Site 13 Mar 12 5/5

Excavation locations:

ID	Lat	Long	Elev
S-1	33.24371°	103.55775°	4223
S-2	33.24378°	103.55769°	4223
S-3	33.24380°	103.55788°	4226' ?
S-4	33.24373°	103.55790	4219' ?

Error = 14-16'

Soil Samples of Lab Analysis

S-1 @ 20'
S-2 @ 25'
S-3 @ 20'
S-4 @ 20'

8021B
8015B full
300.0 <chloride>
4x2 = 8 samples for labs

S-1 @ 15'
S-2 @ 20'
S-3 @ 15'
S-4 @ 15'

S-1 @ 15' LNK + S-1 @ 20' > Rad E903.0/E904.0

SWA off site @ 1715