Ocotillo
ENVIRONMENTAL

April 5, 2010

Dirt Work • On-Site Remediation & Soil Testing • Excavation

Mr. Mike Bratcher
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1301 W. Grand Avenue
Artesia, New Mexico 88210

Re: Remediation Workplan,
Marks and Garner Production LTD Co., Cave State #4
Unit Letter F (SE/4, NW/4), Section 4, Township 17 South, Range 29 East,
Eddy County, New Mexico
(Latitude: N 32.86636°, Longitude: W 104.08299°)
2RP #307

Dear Mr. Bratcher:

Marks and Garner Production LTD Co. (M&G), has retained Ocotillo Environmental, LLC (Ocotillo) to remediate impacts to soil from a leak at the Cave State #4 wellhead. The well is located in the southeast quarter (SE/4) of the northwest quarter (NW/4), Section 4, Township 17 South, Range 29 East, Eddy County, New Mexico (Site). The date and volume of the release are unknown. A C-141 was submitted to the New Mexico Oil Conservation Division (NMOCD) on April 9, 2009. Appendix A provides a copy of the C141. Figure 1 shows the site location.

Based on published literature (1961), well records of the New Mexico State Engineer, and well records of the United States Geological Survey, groundwater occurs at approximately 65 feet bgs in the well located nearest the Site. No domestic water wells are located within 1,000 feet of the site. The NMOCD has established recommended remediation action levels (RRALs) for benzene, total BTEX and TPH resulting from spills of natural gas liquids ("Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993"). Remediation levels for benzene, total BTEX and TPH were calculated using the following NMOCD criteria:

Criteria	Result	Ranking Score
Depth-to-Groundwater	50 - 99 Feet	10
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1000 Horizontal Feet	0
		Total: 10

The following RRALs have been assigned based on NMOCD criteria:

Benzene	**10 mg/kg**
Total BTEX	**50 mg/kg**
TPH	**1,000 mg/kg**

Initial Investigation

On September 10, 2009, a letter was prepared for the NMOCD by R.T. Hicks Consultants, Ltd. (Hicks), that reported results of soil samples collected at the site in order to provide horizontal delineation of the spill. Hicks also provided documentation that groundwater in the area is confined, thereby making the depth to groundwater "not relevant". Appendix B provides a copy of the "Hicks" diagram (Plate 2D) showing sample point locations and chloride

P.O. Box 1816 • Hobbs, NM 88241
Office (505) 393-6371 • Fax (505) 393-6374

concentrations, as well as a copy of the "Hicks" table of Field and Laboratory Data – Soil Samples.

Current Investigation

On March 2, 2010, Ocotillo installed two (2) soil borings (BH-1 and BH-2) at the site, using an air rotary drilling rig, in order to further assess the horizontal and vertical limits of the spill. Soil samples from the exploratory borings were collected in five foot intervals from the ground surface to a depth of approximately 21 feet below ground surface (bgs). The soil borings were plugged with bentonite. Figure 2 shows the locations of the soil borings. Appendix C provides copies of the Well Record and Logs provided to the Office of the State Engineer.

The soil samples from borings BH-1 and BH-2 were placed in clean glass sample jars, labeled, and delivered under chain-of-custody control to Xenco Laboratories, located in Odessa, Texas. All soil samples collected from borings BH-1 and BH-2 were analyzed for chlorides by EPA method E300. Table 1 presents a summary of the laboratory analysis of soil samples. Laboratory analysis and chain of custody documentation are included in Appendix D.

Referring to Table 1, chloride concentrations in samples from boring BH-1 were above the NMOCD standard of 250 mg/kg until a depth of 20–21' bgs (123 mg/kg). The soil samples collected from background boring BH-2 all reported chloride concentrations below 250 mg/kg.

Proposed Remediation

Marks and Garner proposes to conduct excavation of the chloride impacted soil in the vicinity of soil boring BH-1 to a depth of approximately five (5) feet bgs. Horizontal delineation will be determined by laboratory analysis of samples collected during excavation. All excavated soil with a chloride concentration greater than 5,000 mg/kg will be hauled to an NMOCD approved disposal facility. Excavated soil with a chloride concentration less than 5,000 mg/kg will be blended on-site with organic material, in order to reduce the chloride concentrations to less than 1,000 mg/kg. A 20 mil plastic liner will be installed at the five foot depth, and the excavated areas will be backfilled with either clean soil or blended soil with a chloride concentration less than 1,000 mg/kg. Excess blended soil (with a chloride concentration less than 1,000 mg/kg) will be used to construct firewalls around the Marks and Garner tank batteries and / or other ancillary equipment.

If you have any questions or need additional information, please call Mr. Quinton Welborn at (575) 631-0949, or myself at (575) 441-7244. We may also be reached by email at qwelborn@valornet.com or Cindy.Crain@gmail.com.

Sincerely,
Ocotillo Environmental, LLC

Cindy K. Crain

Cindy K. Crain, P.G.
Environmental Manager

cc: Quinton Welborn, Marks & Garner

FIGURES

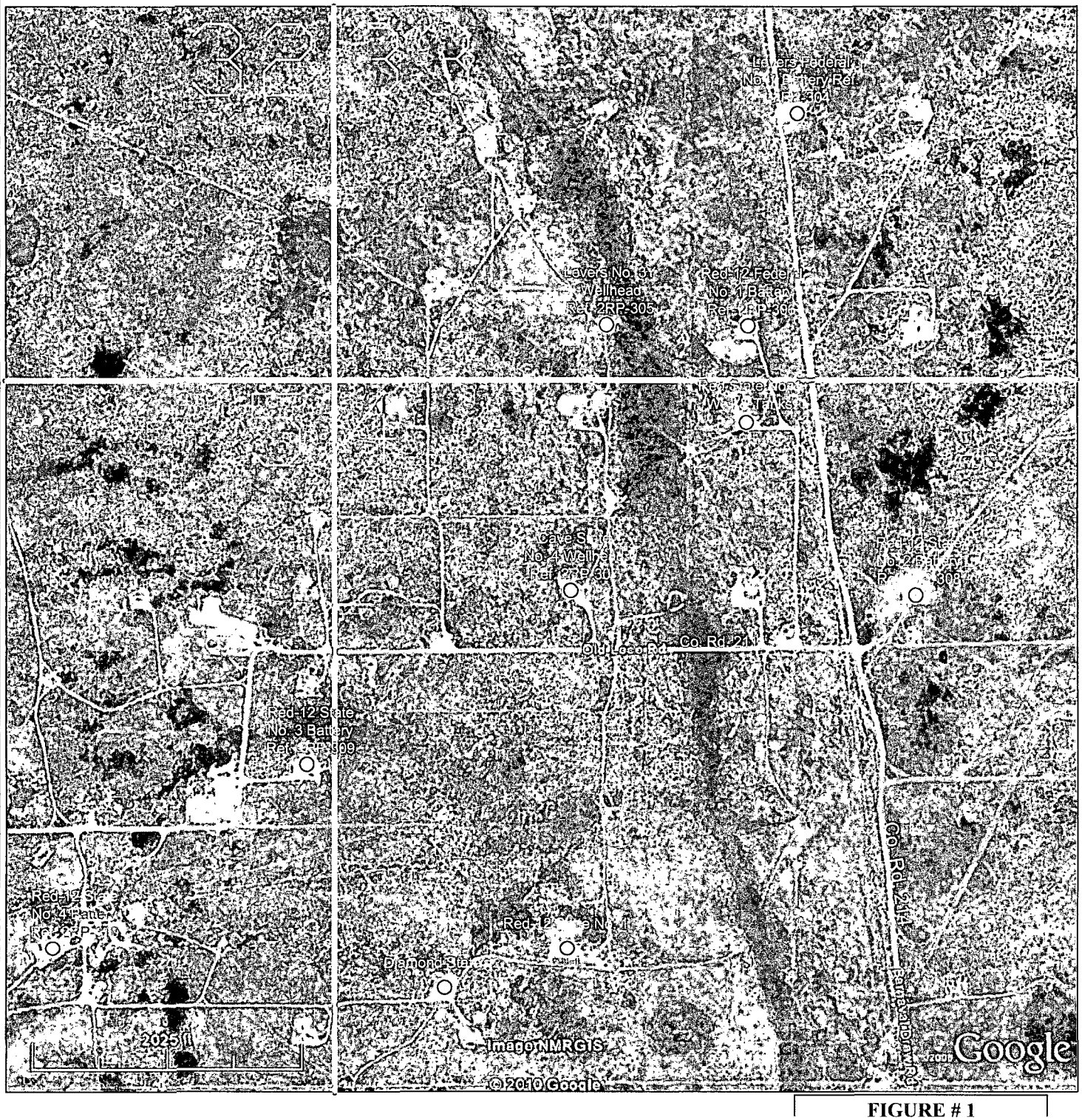


FIGURE # 1

	Eddy County, New Mexico
N W E S	Marks and Garner Production Ltd Co. T-16-S, R-29-E, Sec. 33 T-17-S, R-29-E, Sec. 4 & 5
DATE: 04-05-10	**Site Vicinity Map**
NAME: JTC	
PROJECT NO. :	Ocotillo ENVIRONMENTAL

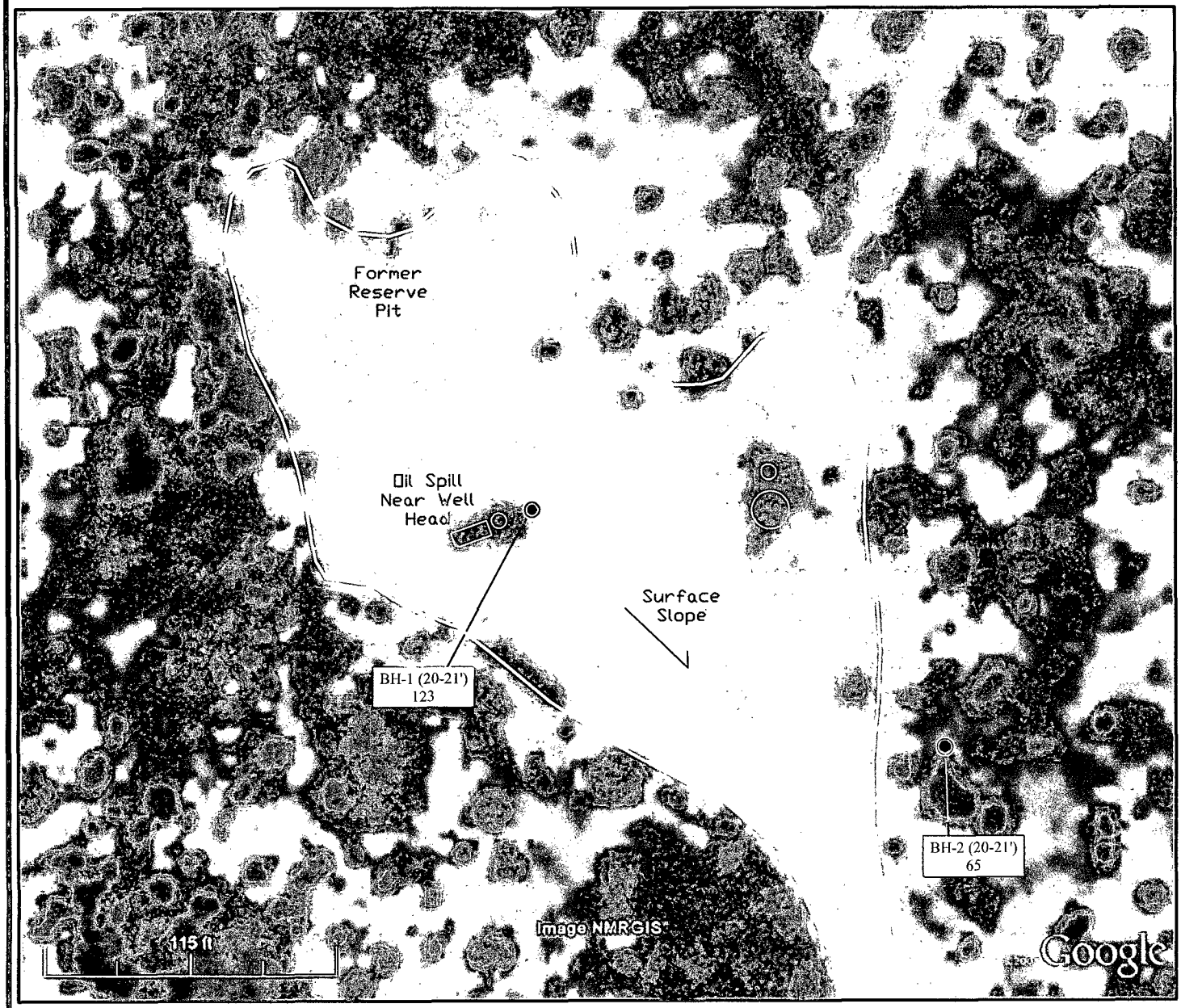


FIGURE # 2

Eddy County, New Mexico

Marks and Garner

Cave State No. 4

T-17-S, R-29-E, Sec 4

Site Drawing With Boring Locations

LEGEND

BH-1 (20-21') 123 — Boring Location With Depth (feet bgs) and Chloride Concentration (mg/kg)

GPS Coordinates

BH-1	N.32.86636	W.104.08299
BH-2	N.32.86617	W.104.08209

N W E S

DATE: 04-05-10
NAME: JTC
PROJECT NO.: 0110-013C

Ocotillo ENVIRONMENTAL

TABLE

Table 1:

Summary of Laboratory Analysis of Soil Samples from Soil Borings
Marks and Garner Production LTD Co., Cave State #4
Unit Letter F, Section 4, Township 17 South, Range 29 East
Eddy County, New Mexico

Sample Date	Bore Hole	Sample Depth (feet BGS)	Chloride (mg/kg)
3/2/10	BH-1	0 - 1	1580
3/2/10	BH-1	5 - 6	4550
3/2/10	BH-1	10 - 11	293
3/2/10	BH-1	15 - 16	462
3/2/10	BH-1	20 - 21	123
3/2/10	BH-2	0 - 1	<9.29
3/2/10	BH-2	5 - 6	262
3/2/10	BH-2	10 - 11	119
3/2/10	BH-2	15 - 16	68.6
3/2/10	BH-2	20 - 21	65.0

APPENDIX A

INITIAL C141 DOCUMENTATION

District I
1625 N French Dr , Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St. Francis Dr , Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

MAY - 7 2009

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

30-015-24742

Release Notification and Corrective Action

nMLB0913441726

OPERATOR

☑ Initial Report ☐ Final Report

Name of Company Marks & Garner Production 14070	Contact Quinton Welborn
Address P.O. Box 1089	Telephone No. 575-393-9358
Facility Name Cave ST #4	Facility Type Oil Well

Surface Owner State	Mineral Owner Marks & Garner	Lease No.30-015-24742

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	4	17S	29E	1650	N	1650	W	Eddy

Latitude _____ Longitude _____

NATURE OF RELEASE

Type of Release Leak	Volume of Release	Volume Recovered
Source of Release	Date and Hour of Occurrence	Date and Hour of Discovery
Was Immediate Notice Given? ☐ Yes ☐ No ☑ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☑ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Leaking well head, Clean well head and effected area

Describe Area Affected and Cleanup Action Taken.*

Fix Leak.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Quinton Welborn

Printed Name: Quinton Welborn

Title: Manager

E-mail Address: QWelborn@Valornet.com

Date: Phone:

OIL CONSERVATION DIVISION

Signed By Mike Bratcher

Approved by ~~District Supervisor~~:

Approval Date: MAY 14 2009 Expiration Date:

Conditions of Approval: Remediation per OCD Rules & Guidelines

Attached ☒

Attach Additional Sheets If Necessary

MLB0913439885

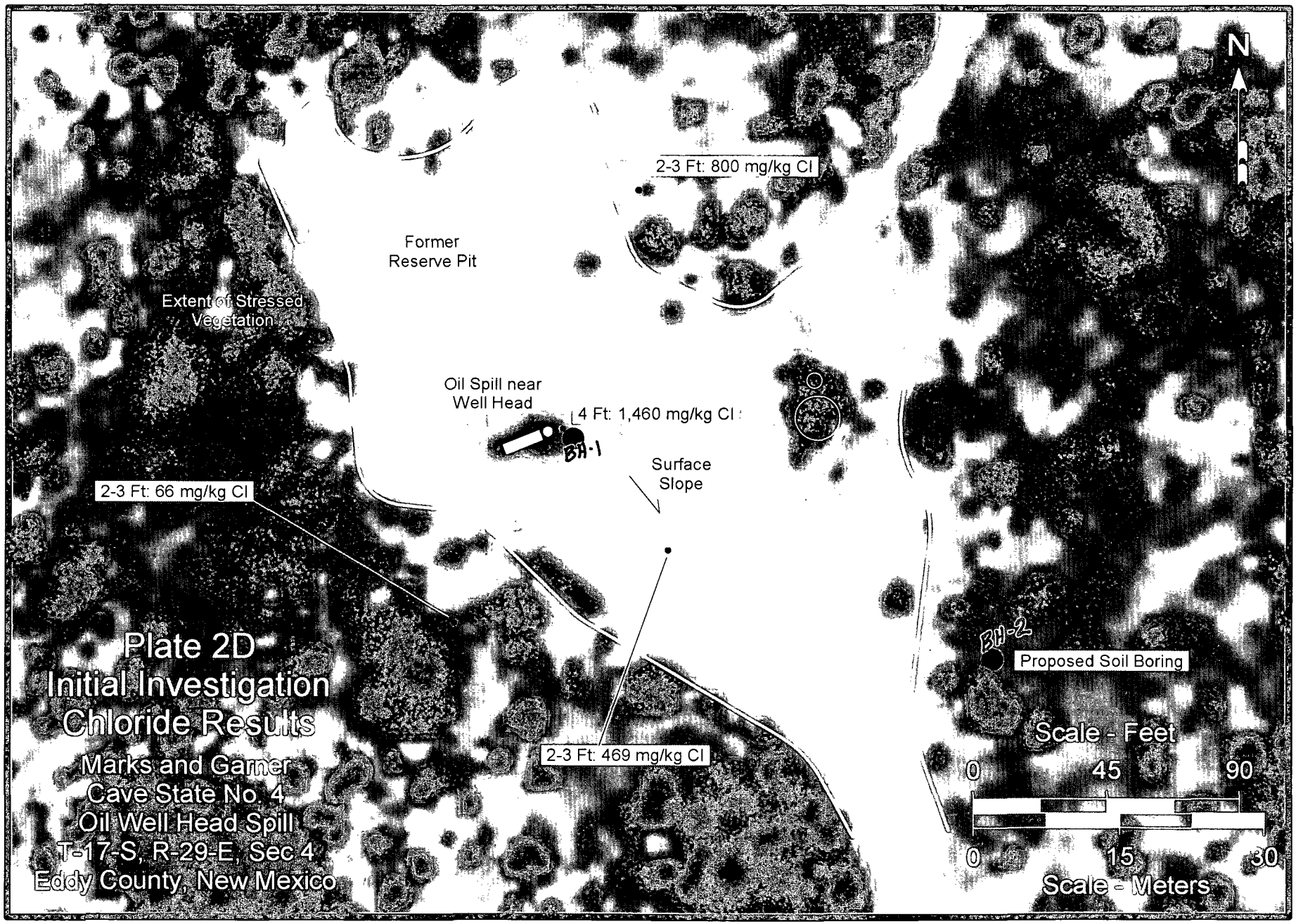
2RP-307

Date: 4/9/09

APPENDIX B

R.T. HICKS INITIAL INVESTIGATION

PLATE 2D
And
TABLE OF FIELD AND LABORATORY DATA


N
2-3 Ft: 800 mg/kg Cl
Former
Reserve Pit
Extent of Stressed
Vegetation
Oil Spill near
Well Head
4 Ft: 1,460 mg/kg Cl
BH-1
Surface
Slope
2-3 Ft: 66 mg/kg Cl
2-3 Ft: 469 mg/kg Cl
BH-2
Proposed Soil Boring
Plate 2D
Initial Investigation
Chloride Results
Marks and Garner
Cave State No. 4
Oil Well Head Spill
T-17-S, R-29-E, Sec 4
Eddy County, New Mexico
Scale - Feet
0
45
90
0
15
30
Scale - Meters

Marks & Garner - Cave State #4 Site

Field and Laboratory Data - Soil Samples

Sample Location	Depth (feet)	Sample Date	Field Cl (mg/kg)	Lab Cl (mg/kg)	PID (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	BTEX (mg/kg)	C_{6-12} (mg/kg)	C_{12-28} (mg/kg)	C_{28-35} (mg/kg)
Stockpile Soil	---	6/22/2009	---	---	185	0.0519	1.22	4.45	9.284	15.0	2,050	**38,400**	2,820
Oil Spill Area	2.0	6/22/2009	---	---	0	---	---	---	---	---	---	---	---
	4.0	6/22/2009	---	**1,460**	0	<0.0012	<0.0024	<0.0012	<0.0024	<0.008	<17.8	18.7	<17.8
55-Feet Southeast	2-3	8/28/2009	**469**	---	0	---	---	---	---	---	---	---	---
85-Feet Northeast	2-3	8/28/2009	**800**	---	0	---	---	---	---	---	---	---	---
75-Feet Southwest	2-3	8/28/2009	66	---	0	---	---	---	---	---	---	---	---

NMOCD 1993 Guideline RRALs	**250***	---	**10**	---	---	---	**50**	**5,000**	

*Chloride RRAL is based on the NMOCD May 28, 2004 Interim Pit and Below-Grade Tank Guidelines

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
CAVE STATE #4 SB-1	
WELL OWNER NAME(S)	PHONE (OPTIONAL)
MARKS AND GARNER PRODUCTION COMPANY LTD	
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
P.O. BOX 1089	HOBBS / NM / 88241

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	51	18.00	N
	LONGITUDE	104	4	58.00	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

FROM LOCO HILLS GENERAL STORE GO 6 MI W TO CR 214 TURN R GO 3 MI FOLLOW GPS TO SITE.

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	¼	¼	¼		☐ NORTH ☐ SOUTH	☐ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1478	EDWARD BRYAN	STRAUB CORPORATION

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
3-2-10	3-2-10	0	20	N/A

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): N/A

DRILLING FLUID: ☑ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	20	5	N/A	N/A	N/A	N/A	N/A

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
CAVE STATE #4 SB-2	
WELL OWNER NAME(S)	PHONE (OPTIONAL)
MARKS AND GARNER PRODUCTION COMPANY LTD	
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
P.O. BOX 1089	HOBBS / NM / 88241

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	51	18.00	N
	LONGITUDE	104	4	58.00	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

FROM LOCO HILLS GENERAL STORE GO 6 MI W TO CR 214 TURN R GO 3 MI FOLLOW GPS TO SITE.

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP ☐ NORTH ☐ SOUTH	RANGE ☐ EAST ☐ WEST
¼	¼	¼	¼			

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1478	EDWARD BRYAN	STRAUB CORPORATION

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
3-2-10	3-2-10	0	20	N/A

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): N/A

DRILLING FLUID: ☑ AIR ☐ MUD ☐ ADDITIVES - SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER - SPECIFY:

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	20	5	N/A	N/A	N/A	N/A	N/A

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

APPENDIX D

ANALYTICAL DATA AND CHAIN OF CUSTODY DOCUMENTATION

Analytical Report 364830

for

Ocotillo Environmental, LLC

Project Manager: Cindy Crain

Marks & Garner Cave State # 4

0110-013C

24-MAR-10

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)
Xenco-Boca Raton (EPA Lab Code: FL00449):
Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295)

24-MAR-10

Project Manager: **Cindy Crain**
Ocotillo Environmental, LLC
P.O. Box 1816
Hobbs, NM 88241

Reference: XENCO Report No: **364830**
Marks & Garner Cave State # 4
Project Address: Eddy County, NM

Cindy Crain:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 364830. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 364830 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II
Odessa Laboratory Manager

Sample Cross Reference 364830

Ocotillo Environmental, LLC, Hobbs, NM

Marks & Garner Cave State # 4

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH-1	S	Mar-02-10 09:20	0 - 1 ft	364830-001
BH-1	S	Mar-02-10 09:26	5 - 6 ft	364830-002
BH-1	S	Mar-02-10 09:30	10 - 11 ft	364830-003
BH-1	S	Mar-02-10 09:34	15 - 16 ft	364830-004
BH-1	S	Mar-02-10 09:36	20 - 21 ft	364830-005
BH-2	S	Mar-02-10 09:58	0 - 1 ft	364830-006
BH-2	S	Mar-02-10 10:00	5 - 6 ft	364830-007
BH-2	S	Mar-02-10 10:02	10 - 11 ft	364830-008
BH-2	S	Mar-02-10 10:05	15 - 16 ft	364830-009
BH-2	S	Mar-02-10 10:08	20 - 21 ft	364830-010

CASE NARRATIVE

Client Name: Ocotillo Environmental, LLC
Project Name: Marks & Garner Cave State # 4

Project ID:	*0110-013C*	*Report Date:*	*24-MAR-10*
Work Order Number:	*364830*	*Date Received:*	*03/08/2010*

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-797263 Percent Moisture
None

Batch: LBA-797790 Inorganic Anions by EPA 300
None

Certificate of Analysis Summary 364830

Ocotillo Environmental, LLC, Hobbs, NM

Project Name: Marks & Garner Cave State # 4

Project Id: 0110-013C
Contact: Cindy Crain
Project Location: Eddy County, NM

Date Received in Lab: Mon Mar-08-10 02:53 pm
Report Date: 24-MAR-10
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	*364830-001*		*364830-002*		*364830-003*		*364830-004*		*364830-005*		*364830-006*	
	Field Id:	BH-1		BH-1		BH-1		BH-1		BH-1		BH-2	
	Depth:	0-1 ft		5-6 ft		10-11 ft		15-16 ft		20-21 ft		0-1 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Mar-02-10 09:20		Mar-02-10 09:26		Mar-02-10 09:30		Mar-02-10 09:34		Mar-02-10 09:36		Mar-02-10 09:58	
Anions by E300	*Extracted:*												
	Analyzed:	Mar-11-10 21:16		Mar-11-10 21:16		Mar-11-10 21:16		Mar-11-10 21:16		Mar-11-10 21:16		Mar-11-10 21:16	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1580	21.9	4550	47.0	293	18.4	462	22.4	123	4.65	ND	9.29

Certificate of Analysis Summary 364830

Ocotillo Environmental, LLC, Hobbs, NM

Project Name: Marks & Garner Cave State # 4

Project Id: 0110-013C
Contact: Cindy Crain
Project Location: Eddy County, NM

Date Received in Lab: Mon Mar-08-10 02:53 pm
Report Date: 24-MAR-10
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	364830-001		364830-002		364830-003		364830-004		364830-005		364830-006	
	Field Id:	BH-1		BH-1		BH-1		BH-1		BH-1		BH-2	
	Depth:	0-1 ft		5-6 ft		10-11 ft		15-16 ft		20-21 ft		0-1 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Mar-02-10 09:20		Mar-02-10 09:26		Mar-02-10 09:30		Mar-02-10 09:34		Mar-02-10 09:36		Mar-02-10 09:58	
Percent Moisture	***Extracted:***												
	Analyzed:	Mar-09-10 17:00		Mar-09-10 17:00		Mar-09-10 17:00		Mar-09-10 17:00		Mar-09-10 17:00		Mar-09-10 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		4.02	1.00	10.6	1.00	8.79	1.00	6.44	1.00	9.63	1.00	9.59	1.00

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Version: 1.003

Brent Barron, II
Odessa Laboratory Manager

Certificate of Analysis Summary 364830

Ocotillo Environmental, LLC, Hobbs, NM

Project Name: Marks & Garner Cave State # 4

Project Id: 0110-013C
Contact: Cindy Crain
Project Location: Eddy County, NM

Date Received in Lab: Mon Mar-08-10 02:53 pm
Report Date: 24-MAR-10
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	364830-007		364830-008		364830-009		364830-010					
	Field Id:	BH-2		BH-2		BH-2		BH-2					
	Depth:	5-6 ft		10-11 ft		15-16 ft		20-21 ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Mar-02-10 10:00		Mar-02-10 10:02		Mar-02-10 10:05		Mar-02-10 10:08					
Anions by E300	*Extracted:*												
	Analyzed:	Mar-11-10 21:16		Mar-11-10 21:16		Mar-11-10 21:16		Mar-11-10 21:16					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		262	22.3	119	18.4	68.6	21.8	65.0	9.20				

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	Depth:	5-6 ft		10-11 ft		15-16 ft		20-21 ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Mar-02-10 10:00		Mar-02-10 10:02		Mar-02-10 10:05		Mar-02-10 10:08					
Percent Moisture	***Extracted:***												
	Analyzed:	Mar-09-10 17:00		Mar-09-10 17:00		Mar-09-10 17:00		Mar-09-10 17:00					
	Units/RL:	%	RL	%	RL	%	RL	%	RL				
Percent Moisture		5.90	1.00	8.59	1.00	3.74	1.00	8.67	1.00				

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the MQL and above the SQL.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

* Outside XENCO's scope of NELAC Accreditation.

Blank Spike Recovery

Project Name: Marks & Garner Cave State # 4

Work Order #: 364830 **Project ID:** 0110-013C

Lab Batch #: 797790 **Sample:** 797790-1-BKS **Matrix:** Solid

Date Analyzed: 03/11/2010 **Date Prepared:** 03/11/2010 **Analyst:** LATCOR

Reporting Units: mg/kg **Batch #:** 1

	BLANK /BLANK SPIKE RECOVERY STUDY					
Anions by E300 **Analytes**	**Blank Result [A]**	**Spike Added [B]**	**Blank Spike Result [C]**	**Blank Spike %R [D]**	**Control Limits %R**	**Flags**
Chloride	ND	12.0	12.3	103	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.
BRL - Below Reporting Limit

Version: 1.003

Form 3 - MS Recoveries

Project Name: Marks & Garner Cave State # 4

Work Order #: 364830
Lab Batch #: 797790
Project ID: 0110-013C
Date Analyzed: 03/11/2010
Date Prepared: 03/11/2010
Analyst: LATCOR
QC- Sample ID: 364718-002 S
Batch #: 1
Matrix: Soil
Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	4.83	126	129	99	75-125	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Version: 1.003

Sample Duplicate Recovery

Project Name: Marks & Garner Cave State # 4

Work Order #: 364830

Lab Batch #: 797790 **Project ID:** 0110-013C

Date Analyzed: 03/11/2010 **Date Prepared:** 03/11/2010 **Analyst:** LATCOR

QC- Sample ID: 364718-002 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Anions by E300	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	4.83	ND	NC	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.
BRL - Below Reporting Limit

Version: 1.003

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Cindy Crain

Company Name: Ocotillo Environmental, LLC

Company Address: PO Box 1816

City/State/Zip: Hobbs, NM 88241

Telephone No: (575) 441-7244

Fax No: (432) 272-0304

Sampler Signature: Cindy Crain

e-mail: cindy.crain@gmail.com

Project Name: Marks & Garner Cave State #4

Project #: 0110-013C

Project Loc: Eddy Co., NM

PO #:

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 364830

Analyze For: TCLP: / TOTAL:

Lab #	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix (DW=Drinking Water SL=Sludge GW=Groundwater S=Soil/Solid NP=Non-Potable Specify Other)	TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	BH-1	0	1	3/2/10	0920		1							✓		S				✓									✓
02	"	5	6	"	0926		1							✓		S				✓									✓
03	"	10	11	"	0930		1							✓		S				✓									✓
04	"	15	16	"	0934		1							✓		S				✓									✓
05	"	20	21	"	0936		1							✓		S				✓									✓
06	BH-2	0	1	"	0958		1							✓		S				✓									✓
07	"	5	6	"	1000		1							✓		S				✓									✓
08	"	10	11	"	1002		1							✓		S				✓									✓
09	"	15	16	"	1005		1							✓		S				✓									✓
10	"	20	21	"	1008		1							✓		S				✓									✓

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
Cindy Crain	3/8/10	1453			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			[illegible signature]	3.8.10	1453

Laboratory Comments:
[illegible]
Sample Hand Delivered
by Sampler/Client Rep.?
by Courier? UPS DHL FedEx Lone Star
Temperature Upon Receipt: 17.1 °C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Ocotillo Env.

Date/ Time: 3.8.10 14:53

Lab ID #: 304830

Initials: AL

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	(Yes)	No	17.1 °C	
#2	Shipping container in good condition?	(Yes)	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	(Not Present)	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	(Not Present)	
#5	Chain of Custody present?	(Yes)	No		
#6	Sample instructions complete of Chain of Custody?	(Yes)	No		
#7	Chain of Custody signed when relinquished/ received?	(Yes)	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	(ID written on Cont./ Lid)	
#9	Container label(s) legible and intact?	Yes	No	(Not Applicable)	
#10	Sample matrix/ properties agree with Chain of Custody?	(Yes)	No		
#11	Containers supplied by ELOT?	(Yes)	No		
#12	Samples in proper container/ bottle?	(Yes)	No	See Below	
#13	Samples property preserved?	(Yes)	No	See Below	
#14	Sample bottles intact?	(Yes)	No		
#15	Preservations documented on Chain of Custody?	(Yes)	No		
#16	Containers documented on Chain of Custody?	(Yes)	No		
#17	Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below	
#18	All samples received within sufficient hold time?	(Yes)	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20	VOC samples have zero headspace?	Yes	No	(Not Applicable)	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event