Cross Border Resources

Sunray State Tank Battery

Delineation Report/ Work Plan

Section 16, Township 8S, Range 31E

Chaves County, New Mexico

February 6, 2017

Prepared for:
Red Mountain Resources
14282 Gills Rd.
Farmers Branch, TX 75244

By:

Safety & Environmental Solutions, Inc.
703 E. Clinton Suite 102
Hobbs, New Mexico 88240
(505) 397-0510

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I. Company Contacts

NAME	Company	Telephone	E-mail
Ross Pearson	Red Mountain Resources, Inc.	817-996-4653	ross@redmountainresources.com
Bob Allen	SESI	505-397-0510	ballen@sesi-nm.com

II. Background

Safety and Environmental Solutions, Inc. (SESI) was engaged to perform delineation services on the Sunray State Battery located in Section 16, Township 8S, Range 31E Chaves County, New Mexico. According to the C-141: a compromised line to the heater treater ruptured, causing a release of crude oil to ground surface. The line was repaired, and the impacted surface area was fenced in. The C-141 was filed with NMOCD on April 24, 2015 and assigned **1RP-3619.**

III. Surface and Ground Water

Research of the *New Mexico Office of the State Engineer* indicates that there is no record of groundwater in the immediate vicinity, but that average depth to water for Township 8S, and Range 31E is 103' BGS.

IV. Characterization

The target cleanup levels are determined using the *Guidelines for Remediation of Leaks, Spills and Releases* published by the NMOCD (August 13, 1993). Based on the ranking criteria presented below, the applicable Recommended Remediation Action Levels (RRAL) are 10 parts per million (ppm) Benzene, 50 ppm combined benzene, toluene, ethyl benzene, and total xylenes (BTEX), and 100 ppm Total Petroleum Hydrocarbons (TPH). Characterization of vertical extent of chloride concentration to a level of 250 mg/kg (PPM) is also required.

Depth to Ground Water:			
(Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet	20 points	
	50 feet to 99 feet	10 points	
	>100 feet	0 points	**X**
Wellhead Protection Area:			
(Less than 200 feet from a private domestic water source; or less than 1000 feet from all other water sources)	Yes	20 points	
	No	0 points	**X**
Distance to Surface Water:			
(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet	20 points	
	200 feet to 1000 feet	10 points	
	>1000 feet	0 points	**X**
RANKING SCORE (TOTAL POINTS)			**0**

V. Work Performed

On June 15, 2016 SESI personnel were on location to address the concerns of ground surface impact. The impacted area was mapped utilizing a handheld Trimble Juno 3D, whereby it was determined that the spill area measured approximately 28,704 sq. ft. The site was flagged in order to activate a line locate request with the New Mexico One Center, in order to conduct a vertical delineation of the impacted area.

On June 29, 2016 SESI personnel revisited the site in order to determine the vertical extent of impact and map sample point positions. Four (4) Soil Bores were advanced from depths of 1' BGS at BH-4 to 27' BGS at BH-3, respectively. Representative soil samples were retrieved at various depth below ground surface, properly packaged, preserved, transported to Cardinal Labs of Hobbs, NM by Chain of Custody and analyzed for Chloride (Cl^-) (Method SM 4500Cl-B). The results are presented in the table below:

Soil Sample Results: Field Tests 06-29-16			
SAMPLE ID	**Sample Date**	**Field Test CHLORIDES**	**Lab Results CHLORIDES**
BH-1 Surface	6/29/16	1030 ppm	
BH-1 @ 1'	6/29/16	1030 ppm	
BH-1 @ 2'	6/29/16	1040 ppm	
BH-1 @ 3'	6/29/16	1045 ppm	
BH-1 @ 4'	6/29/16		32.0
BH-2 @ 4'	6/29/16	<124 ppm	
BH-3 @ 4'	07/01/16		32.0
BH-3 @ 7'	6/29/16		976
BH-3 @ 8'	07/01/16	4484 ppm	
BH-3 @ 11'	6/29/16	4884 ppm	
BH-3 @ 12'	7/01/16		2440
BH-3 @ 13'	6/29/16	3164 ppm	
BH-3 @ 16'	7/01/16	1012 ppm	
BH-3 @ 17'	6/29/16	1528 ppm	
BH-3 @ 20'	7/01/16		976
BH-3 @ 24'	07/01/16	360 ppm	
BH-3 @ 27'	07/01/16		192
BH-4 Surface	6/29/16	<124	
BH-4 @ 1'	6/29/16		16.0

Between October 13, 2016 and October 24, 2016, Gandy removed the hard pan hydrocarbon from the site and transported the material to an NMOCD approved facility.

VI. Action Plan

SESI proposes the following:

1. The area West of the battery, off the location (shaded red in Figure 2), remove contaminated soil to a level where Chlorides are less than 250 ppm
2. The small area, where the water tank was located on location on the West side (shaded blue in Figure 2), excavate to four feet (4') and install a 20 mil polyethylene liner.
3. All contaminated soil will be transported an NMOCD approved facility.
4. Confirmation samples will be taken to verify the removal of contamination.
5. All documentation for site remediation will be submitted to the appropriate agencies.

6. In late April or early May 2017, the site will be reseeded with BLM #2-LPC seed mixture and applied at 5lbs/ acre to the entire affected area off the location. The seed mix will be purchased commercially and will be a certified seed mix. There will be no primary or secondary noxious weeds in this mixture. In the event that noxious weeds occur, chemical treatments, along with follow-ups and monitoring will take place. Straw will be scattered over the seed which is intended to hold the seed in place to allow growth to occur. The site will be watered weekly for four weeks. The site will be monitored for growth monthly and the area will be reseeded if growth is not observed within 60 days. When adequate growth has been observed, a report of such growth will be filed with the New Mexico State Land Office.

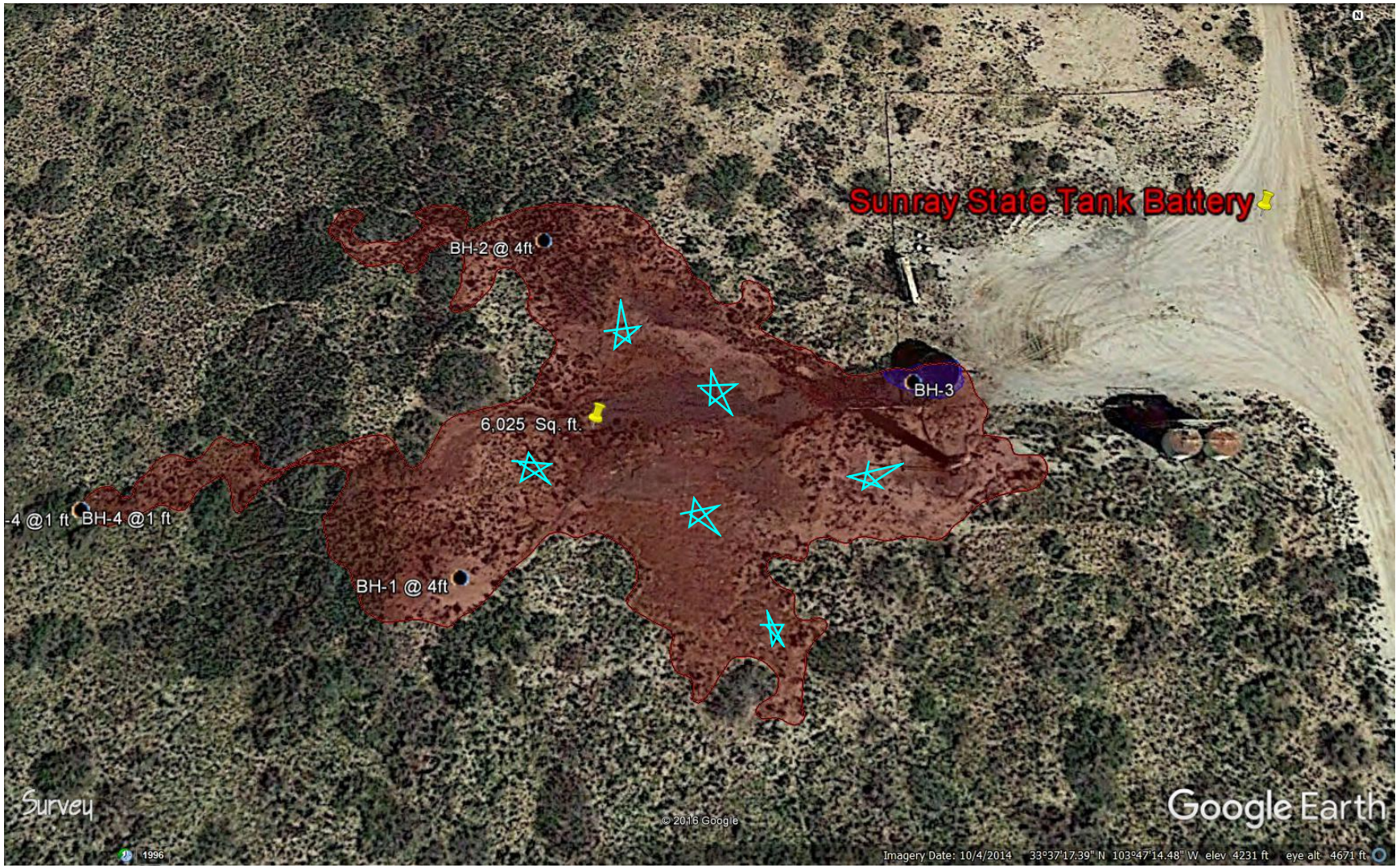
VII. Figures & Appendices

Figure 1 – Vicinity Map
Figure 2– Site Plan
Appendix A – Analytical Results
Appendix B – Site Photos
Appendix C – C-141

Figure 1
Vicinity Map


Sunray State Tank Battery
Survey
© 2016 Google
Google earth
1996
Imagery Date: 10/4/2014 33°37'17.32" N 103°47'13.83" W elev 4231 ft eye alt 4821 ft

Figure 2
Site Plan


Sunray State Tank Battery
BH-2 @ 4ft
BH-3
6,025 Sq. ft.
-4 @1 ft
BH-4 @1 ft
BH-1 @ 4ft
Survey
© 2016 Google
Google Earth
1996
Imagery Date: 10/4/2014 33°37'17.39" N 103°47'14.48" W elev 4231 ft eye alt 4671 ft

Appendix A
Analytical Results

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

July 12, 2016

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: CBR-16-001

Enclosed are the results of analyses for samples received by the laboratory on 07/06/16 9:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	07/06/2016	Sampling Date:	06/29/2016
Reported:	07/12/2016	Sampling Type:	Soil
Project Name:	CBR-16-001	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: BH-1 4' (H601503-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	07/07/2016	ND	432	108	400	3.77	

Sample ID: BH-2 4' (H601503-02)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	07/07/2016	ND	432	108	400	3.77	

Sample ID: BH-3 4' (H601503-03)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**976**	16.0	07/07/2016	ND	432	108	400	3.77	

Sample ID: BH-3 12' (H601503-04)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2440**	16.0	07/07/2016	ND	432	108	400	3.77	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	07/06/2016	Sampling Date:	07/01/2016
Reported:	07/12/2016	Sampling Type:	Soil
Project Name:	CBR-16-001	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: BH-3 20' (H601503-05)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**976**	16.0	07/07/2016	ND	432	108	400	3.77	

Sample ID: BH-3 27' (H601503-06)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**192**	16.0	07/07/2016	ND	432	108	400	3.77	

Sample ID: BH-4 1' (H601503-07)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	07/07/2016	ND	432	108	400	3.77	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

JW

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Safety and Environmental Solutions	**BILL TO**	
Project Manager:	Bob Allen	P.O. #:	
Address:	703 East Clinton, PO Box 1613	Company:	Same
City:	Hobbs State: NM Zip: 88240	Attn:	
Phone #:	575 397-0510 Fax #: 575 393-4388	Address:	
Project #:	CBR-16-001 Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:		Phone #:	
Sampler Name:		Fax #:	

ANALYSIS REQUEST: Chlorides

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	Chlorides
H601503															
1	BH-1 4FT	G	1										06/29	1050	X
2	BH-2 4FT	G	1										06/29	1115	X
3	BH-3 4FT	G	1										07/01	1000	X
4	BH-3 12FT	G	1										07/01	1045	X
5	BH-3 20FT	G	1										07/01	1130	X
6	BH-3 27FT	G	1										07/01	1230	X
7	BH-4 1FT	G	1										06/29	1300	X

Relinquished By: Sean Jung	Date: 07/06/16 Time: 0900	Received By: Jodi Henson	
Relinquished By:	Date: Time:	Received By:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	25.4°C	Sample Condition Cool: ☐ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:

Appendix B
Site Photos

Cross Border Resources
Sunray Battery

Impacted Soil

Leak Source

Impacted Soil looking West

Impacted Overview of Area looking NE

Impacted

Visual Hard-Pan