RECEIVED By OCD District 1 at 8:13 am, Aug 21, 2015



Ms. Kellie Jones New Mexico Oil Conservation Division District 1 1625 N. French Drive Hobbs, New Mexico 88240

Mr. Jeff Robertson Environmental Protection Division Bureau of Land Management 620 E. Greene Street Carlsbad, NM 88220

NOT APPROVED

This final report is not approved for the following reasons: 1. The vertical extent of the release has not been delineated. 2. Once vertical delineation has been determined, the depth to groundwater must be verified. If there is less than 10 feet of separation between groundwater and the vertical extent of the release, groundwater sampling will be required. 3. There should be at least three samples that are below the regulatory threshold or show a trend showing that the concentrations are decreasing at depth.

CH2M 12750 Merit Drive Suite 1100 Dallas, Texas 75251 O +1 972 663 2287 www.ch2m.com

August 19, 2015

Subject: Final Report EOG Resources, Inc. Shinnery Fed #1 1RP-3161 (API 30-025-30247) Lea County, New Mexico

Dear Ms. Jones and Mr. Roberston,

On behalf of EOG Resources, Inc. (EOG), CH2M HILL Engineers Inc. (CH2M) performed a remedial action at Shinnery Fed #1 (site). Results of the previous soil assessment and subsequent remediation activities are summarized below.

Site Description

The site is located approximately 35 miles west of Hobbs, New Mexico. The legal location for this release is Unit Letter K, Section 13, Township 18S, Range 32E in Lea County, New Mexico. The latitude and longitude for the release is 32.74444, -103.7217, respectively. A site location map is presented in **Figure 1** and an area map is presented in **Figure 2**. The site is located approximately 150 yards due south of the well pad for Shinnery Fed #1 (API No. 30-025-30247) on the east side of the lease road.

Site Ranking and Recommended Remedial Action Levels

Per the August 13, 1993 NMOCD Guidelines for Remediation of Leaks, Spills and Releases, the ranking for this site is 10 based on the following criteria:

- Depth to Ground Water 50-99 feet (per USGS Site 324629103253601)
- Wellhead Protection Area >1,000 feet
- Distance to Surface Water Body >1,000 horizontal feet

Based on the site ranking of 10, NMOCD Recommended Remedial Action Levels (RRALs) are 50 milligrams per kilogram (mg/kg) for benzene, toluene, ethylbenzene, xylene (BTEX); 10 mg/kg for benzene; 1,000 mg/kg for total petroleum hydrocarbons (TPH); and 500 mg/kg for chloride.

Background Information

Form C-141 attached as **Appendix A**, was received by the New Mexico Oil Conservation Division (NMOCD) on April 30, 2014 and the site was assigned Remediation Permit 1RP-3161. A Final Report Form C-141 is also attached under **Appendix A**. The following summarizes the site history of the reported release:

- On February 28, 2014, approximately 20 barrels (bbls) of produced water was released due to an equipment malfunction (3-inch poly water line separated). All released fluids were located off the well pad and within the field (150 yards south of the well pad). No fluids were recovered. The spill area measured approximately 60 feet (north to south) by 40 feet (east to west) in the pasture to the north of the equipment malfunction. No watercourses were reached. Based on the source of the spill (produced water), the contaminants of concern (COCs) were identified as BTEX, TPH, and chloride.
- On March 6, 2014, EOG contracted a third party consultant to conduct a site assessment and to facilitate soil sampling activities utilizing a hand auger within the impacted areas. Twelve samples were collected for vertical and horizontal delineation.
- On April 17, 2014, the third party consultant returned to the site and collected four additional samples. Three samples were collected via direct push drilling technologies for vertical delineation. In addition, one sample was collected for horizontal delineation. The spill area was delineated horizontally.
- On October 25, 2014, EOG contracted CH2M to facilitate soil sampling activities within the impacted areas in conjunction with a remediation company (Watson Construction) that was contracted to excavate impacted soils. CH2M HILL collected seven confirmation samples from an excavated zone within the impacted area. The location of the samples was based on observations made from previous soil sampling efforts by the prior contractor and the purpose was to attempt vertical delineation.
- On November 12, 2014, CH2M returned to the site and collected two additional confirmation samples from a deeper excavation to verify that chloride concentrations substantially decreased with depth.
- In support of a NMOCD- and BLM-approved work plan, dated December 8, 2014, impacted soils to a depth of 5 feet below ground surface (bgs) were removed from the site, a polyethylene liner was installed, and non-impacted backfill was placed over the liner by Watson Construction.

The results of the soil sampling activities have been previously provided to NMOCD and BLM. However, historic sample location figures and a data summary table are provided in **Appendix B** and **Appendix C**, respectively, to facilitate report review.

Conclusions

The impacted area was characterized based on the COCs identified for the site. Initial site characterization determined that BTEX and TPH were not of concern and that the cleanup action would be based on chloride soil concentrations. Lateral limits were delineated and the vertical investigation demonstrates that although chloride concentrations remain above RRALs at 20 feet bgs in the eastern portion of the spill footprint (1,150 mg/kg at Shinnery Fed #1-E-11122014-20'), they are below laboratory detection limits at the same depth within the western portion of the spill footprint (<25 mg/kg at Shinnery Fed #1-W-11122014-20'). Additionally, data demonstrates that chloride concentrations substantially decline with depth (from 5,020 mg/kg at 7.5 feet bgs to 1,150 mg/kg at 20 feet bgs). As such, EOG received concurrence from BLM and NMOCD via email on December 12, 2014 that excavation and liner installation was an acceptable remedial action. During January 8-13, 2015 approximately 712 cubic yards of impacted soil was removed from the site and transported to Lea Land landfill for disposal (refer to **Figure 3** for excavation limits), a reinforced 20 mil polyethylene liner was installed (product details contained in **Appendix D**), and approximately 1,008 cubic yards of non-impacted backfill from Canvas Ranch was placed over the liner by Watson Construction (photo log contained in **Appendix E**).

Page 3 August 19, 1015

EOG has fulfilled the scope of work presented in the NMOCD- and BLM-approved work plan and subsequently addressed the requirement to remove or mitigate migration of remaining chlorides in site soil to the maximum extent practicable. EOG requests that a no further action designation be granted for the site. If you have any questions or comments with regards to this request for closure, please do not hesitate to contact Jennifer Dussor at jennifer.dussor@ch2m.com or (972) 663-2287.

Regards, CH2M HILL Engineers, Inc.

Kussell Weig

Russ Weigand Client Services Manager

Dussor

Jennifer Dussor Project Manager

Enclosures:

FiguresFigure 1Site Location MapFigure 2Area MapFigure 3Excavation Limits

Appendixes

Appendix AForm C-141 (Initial and Final)Appendix BHistorical Soil Sample Location FiguresAppendix CHistorical Soil Sampling Data SummaryAppendix DLiner Product SheetAppendix EPhoto Log

C: Zane Kurtz, EOG Jamie Keyes, NMOCD Tomáš 'Doc' Oberding, PhD, NMOCD

Figures



NOTE: This image has been modified from the original. The base map is from Google Earth Pro, but the superimposed information is from CH2M HILL.

FIGURE 1 **Site Location Map EOG Resources - Shinnery Fed #1** *Final Report (1RP3161) Lea County, New Mexico*





NOTE: This image has been modified from the original. The base map is from Google Earth Pro, but the superimposed information is from CH2M HILL.

FIGURE 2 **Area Map EOG Resources - Shinnery Fed #1** *Final Report (1RP3161) Lea County, New Mexico*





NOTE: This image has been modified from the original. The base map is from Google Earth Pro, but the superimposed information is from CH2M HILL.

LEGEND



FIGURE 3 **Excavation Limits EOG Resources - Shinnery Fed #1** *Final Report (1RP3161) Lea County, New Mexico*



Appendix A Form C-141 (Initial and Final)

Oil Conservation Division

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

District IV1220 South St. Francis Dr., Santa Fe, NM 875051220 South St. Francis Dr.Santa Fe, NM 87505Santa Fe, NM 87505											
Release Notification and Corrective Action											
OPERATOR Initial Report S Final Report											
Name of Company EOG Resources, Inc. Contact Zane Kurtz											
Address5509 Champions Dr., Midland, TX 79706Telephone No.432-425-2023Facility NameShinnery Fed #1Facility TypeLease road near active well											
Facility Nar	ne S	hinnery Fed	#1			Facility Typ	e Lease road	i near ac	tive well		
Surface OwnerBLMAPI No. 30-025-30247											
LOCATION OF RELEASE											
Unit Letter K	Section 13	Township 18S	Range 32E	Feet from the 1980					est Line est	County	Lea
			La	titude 32.74	444	Longitud	e103.7217	I			
						OF REL					
Type of Rele	ase Prod	uced Water					Release 20 bbls		Volume F	Recovered	0 bbls
Source of Re							lour of Occurrenc			Hour of Dis	covery
Rupture of 3- Was Immedia			es 🗌 1	No 🗌 Not Requ	ired	2/28/2014 If YES, To			2/28/2014 Curen (BI	4:00 PM LM)	
By Whom?	Ryan Kain	ier				Date and F	Iour 3-5-2014				
Was a Water	course Read	ched?	Yes 🛛	No		If YES, Volume Impacting the Watercourse.					
If a Watercou No watercour		pacted, Descr ched by spill.	ibe Fully.	*							
Describe Cause of Problem and Remedial Action Taken.* Approximately 20 bbls of produced water was released due to an equipment malfunction (3-inch poly water line separated). All released fluids were located off the well pad and within the field (150 yards south of the well pad). The spill area measured approximately 60 feet (north to south) by 40 feet (east to west) in the pasture to the north of the equipment malfunction. The contaminants of concern (COCs) include benzene, toluene, ethylbenzene, xylene (BTEX), TPH and chloride. No fluids were recovered. Describe Area Affected and Cleanup Action Taken.* The impacted area was characterized based on the above listed COCs. Initial site characterization determined that BTEX and TPH were not											
of concern and that the cleanup action would be based on chloride soil concentrations. Lateral limits were delineated and the vertical investigation demonstrated that although chloride concentrations remained above RRALs at 20 feet below ground surface in one area (1,150 mg/kg), the concentrations substantially declined with depth. As such, EOG received concurrence from BLM and NMOCD to excavate impacted area to a depth of 5 feet below ground surface, install a reinforced poly liner across excavation footprint, and backfill with non-impacted fill. During January 8-13, 2015 approximately 712 cubic yards of impacted soil was removed from the site and transported to Lea Land landfill for disposal, a reinforced 20 mil polyethylene liner was installed, and approximately 1,008 cubic yards of un-impacted backfill (from Canvas Ranch) was placed over the liner by Watson Construction.											
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:							OIL CON	SERVA	ATION	DIVISIO	DN
Printed Name	e: Zane Ku	ırtz				Approved by	Environmental S	pecialist:			
Title: Sr. Sat	fety & Envi	ronmental Rej	presentativ	ve		Approval Dat	e:	E	xpiration	Date:	
E-mail Addre	ess: Zane_	Kurtz@eogre	sources.cc	om		Conditions of	Approval:			Attached	

* Attach Additional Sheets If Necessary

Phone: 432-425-2023

Date: 07-20-2015

HOBBS OCD

District I 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 **District IV** 1220 S. St. Francis Dr., Santa Fe, NM 87505

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State of New Mexico APR Bnor20 Minerals and Natural Resources

Form C-141 Revised August 8, 2011

Oil Conservation Division RECEIVED220 South St. Francis Dr. Santa Fe, NM 87505

Submit 1 Copy to appropriate District Office in **RECEIVED** cordance with 19.15.29 NMAC.

Release Notification and Corrective Action

	OPERATOR	Initial Report	Final Report
Name of Company – EOG Resources, Inc.	Contact – Ryan Kainer		
Address – 5509 Champions Drive, Midland, TX 79706	Telephone No. (432) 686-3662		
Facility Name – Shinnery Fed #1	Facility Type – Gas Well		

Surface Owner -BLM

Mineral Owner – BLM

API No. 30-025-30247

LOCATION OF RELEASE

Unit Letter K	Section 13	Township 18S	Range 32E	Feet from the 1980	North/South Line South	Feet from the 1980	East/West Line West	County Lea

Latitude 32.7444 Longitude _____-103.7217

NATURE OF RELEASE

Type of Release – Produced Water	Volume of Release - 20 bbls	Volume Recovered – 0 bbls
Source of Release – 3" Poly line ruptured	Date and Hour of Occurrence: 2/28/2014, 4:00 PM	Date and Hour of Discovery 2/28/2014, 4:00PM
/as Immediate Notice Given?	If YES, To Whom?	
🛛 Yes 🔲 No 🗌 Not Requir	ed Jennifer Van Curen (BLM)	
y Whom? Ryan Kainer	Date and Hour 3/5/2014	
/as a Watercourse Reached? □ Yes ⊠ No	If YES, Volume Impacting the W	atercourse.
a Watercourse was Impacted, Describe Fully.*		1 1 / / / /
(A	<i>u</i>	RL = 1.1.14 EPTH TO WATER = 50 ¹
	Q	ENTH IC WHILE DO
escribe Cause of Problem and Remedial Action Taken.*		
pproximately 20 bbls of produced water was released from equipmer cation and within the field (100 yards south of well).	nt malfunction (3" poly water line seper	ated). All released fluids are located off the
escribe Area Affected and Cleanup Action Taken.*		
opensor a da randeled and creatup riedon raten.		
OG propose to delineate the impacted area, vertically and horizontall	y by collecting soil samples and having	them analyzed for TPH, BTEX, and
chlorides. The impacted area will be excavated, stockpiled on poly-pl		sposal facility. Clean material will be
ackfilled within the excavated area to normal grade and seeded with I	BLM seed mix type II.	
	(- the bast of my browledge and under	toged that automate to NMOCD rules and
hereby certify that the information given above is true and complete egulations all operators are required to report and/or file certain release	to the best of my knowledge and unders	and that pursuant to NWOCD fulles and
ublic 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
hould their operations have failed to adequately investigate and remed	diate contamination that pose a threat to	ground water, surface water, human health
r the environment. In addition, NMOCD acceptance of a C-141 repo	rt does not relieve the operator of respo	nsibility for compliance with any other
ederal, state, or local laws and/or regulations.		
	OIL CONSER	VATION DIVISION
Signature:		
rinted Name: Ryan Kainer	Approved by Environmental Specia	list:
Tined Ivane. Ryun Raner		Τ
itle: Sr. Safety & Environmental Rep.	Approval Date: 2-9-19	Expiration Date: 9-12 ~ 19
E-mail Address: ryan kainer@eogresources.com	Conditions of Approval:	
	Site Suple require	Attached
Date: 3/05/2014 Phone: 432-686-3662		7-14-3161
ttach Additional Sheets If Necessary	Dolundo & rendato 5	Ra 09-112 7377
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Appendix B Historical Soil Sample Location Figures











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Appendix C Historical Soil Sampling Data Summary

Appendix C. Historical Soil Sampling Data Summary EOG Resources - Shinnery Fed #1

EOG Resources - Shinnery Fed #1 Final Report (1RP3161) *Lea County, New Mexico*

Sample ID	Depth (bgs)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)	Chlorides (mg/kg)
SDW-01	0-6"	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0.0	<4.00	907
SDW-02	0-6"	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	88.4	<4.00	3,200
SDW-02a	0-6"	4/17/2014	NA	NA	NA	NA	NA	NA	NA	58
SDW-03	0-6"	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	53
SDW-04	0-6"	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	<25.0
BTM-01-A	1'	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	51.4	<4.00	4,040
BTM-01-B	2'	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	1,440
BTM-01-C	3'	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	6,280
BTM-01-D	4'	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	11,100
BTM-01-E	5'	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	10,300
BTM-01-F	6'	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	9,790
BTM-01-G	10'	4/17/2014	NA	NA	NA	NA	NA	NA	NA	7,260
BTM-01-H	15'	4/17/2014	NA	NA	NA	NA	NA	NA	NA	3,290
BTM-01-I	18'	4/17/2014	NA	NA	NA	NA	NA	NA	NA	4,650
BG-01	0-6"	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	154
BG-02	0-6"	3/6/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	4,250
S-8'-10202014	8'	10/20/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	887
A-7.5'-10202014	7.5'	10/20/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	117
B-7.5'-10202014	7.5'	10/20/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	5,070
W-7'-10202014	7'	10/20/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	1,700
BG-7'-10202014	7'	10/20/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	30.1
N-7'-10202014	7'	10/20/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	2,040
E-7.5'-10202014	7.5'	10/20/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	5,020
Shinnery Fed #1-W-11122014-20'	20'	11/12/2014	<0.02	<0.02	<0.02	<0.02	<0.02	<50.0	<4.00	<25.0
Shinnery Fed #1-E-11122014-20'	20'	11/12/2014	<0.02	<0.02	<0.02	<0.02	< 0.02	<50.0	<4.00	1,150

Table Notes:

bold values above Recommended Remedial Action Levels (RRALs)

bgs below ground surface

mg/kg milligram per kilogram

NA not analyzed

' feet

" inches

https://deliver.ch2m.com/projects/653209/Company Confidential/Project Folders/Shinnery/FINAL REPORT/Appendix C.xlsx

Appendix D Liner Product Sheet

DURA+SKRIM® R20BDV

Scrim Reinforced Polyethylene



Product Description

DURA+SKRIM® R20BDV consists of virgin outer layers of highstrength polyethylene film laminated together with hot molten polyethylene. DURA+SKRIM® R20BDV is black on one side and gray on the other for added versatility. The outer layers are formulated with thermal and UV stabilizers to assure long outdoor life. A layer of polyester



scrim reinforcement placed between these plies greatly enhances tear resistance and increases service life. DURA+SKRIM's heavyduty diamond reinforcement responds to tears immediately by surrounding and stopping the tear.

Product Use

DURA+SKRIM® R20BDV is used in applications that require exceptional outdoor life and demand high puncture and excellent barrier properties. DURA+SKRIM® R20BDV is manufactured from a very chemical-resistant, virgin polyethylene.

Size & Packaging

DURA+SKRIM® R20BDV is available in a variety of widths and lengths. Panel sizes up to 57,000 square feet are available. All panels are accordion folded every six feet and tightly rolled on a heavy-duty core for ease of handling and time-saving installation.



Landfill Cover

Product	Part #
DURA+SKRIM	R20BDV

APPLICATIONS

Underslab Vapor Retarders	Earthen Liners
Modular Tank Liners	Interim Landfill Caps
Daily Landfill Covers	Remediation Covers
Remediation Liners	Erosion Control Covers

DURA-SKRIM*

DURA+SKRIM[®] R20BDV



		DURA+SKRIM R20BDV		
PROPERTIES	TEST METHOD	Imperial	Metric	
Appearance		Black	Gray	
THICKNESS, NOMINAL		20 mil	0.51 mm	
Weight		74 lbs/MSF 10.7 oz./yd ²	361 g/m²	
CONSTRUCTION		Extrusion laminated wi	th scrim reinforcement	
Tensile Strength (scrim break)	ASTM D7003	75 lbf/in	131 N/cm	
Tensile Elongation at Break (film break)	ASTM D7003	700 %	700 %	
TENSILE ELONGATION AT BREAK (SCRIM BREAK)	ASTM D7003	20 %	20 %	
GRAB TENSILE	ASTM D7004	114 lbf	507 N	
PUNCTURE RESISTANCE	ASTM D4833	40 lbf	178 N	
*TRAPEZOID TEAR	ASTM D4533	70 lbf	311 N	
Mullen Burst	ASTM D751	140 psi	965 kPa	
HIGH PRESSURE OIT (HPOIT)	ASTM D5885	> 140	0 min	
MAXIMUM USE TEMPERATURE		180°F	82°C	
MINIMUM USE TEMPERATURE		-70°F	-57°C	
WVTR	ASTM E96 Method A	0.023 g/100in²/day	0.354 g/m²/day	
Perm Rating	ASTM E96 Method A	0.052 Perms grains/(ft ² ·hr·in·Hg)	0.034 Perms g/(24hr·m²·mm Hg)	
*Tests are an average of diagonal directions.				



DURA SKRIM® R20BDV is a black/gray four-layer reinforced laminate. The outer layers consist of high-strength, polyethylene film manufactured using virgin grade resins and is formulated with thermal and UV stabilizers to assure long outdoor life. DURA+SKRIM® R20BDV is reinforced with 1000 denier scrim reinforcement laid in a diagonal pattern spaced 3/8" apart with an additional machine direction scrim every 3" across the width to provide excellent tear resistance and increased service life. The individual plies are laminated together with molten polyethylene.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/ or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.RavenEFD.com



ISO 9001:2008 ERTIFIED MANAGEMENT SYSTEM





Engineered Films Division P.O. Box 5107 Sioux Falls, SD 57117-5107 Ph: (605) 335-0174 • Fx: (605) 331-0333

Toll Free: 800-635-3456 Email: efdsales@ravenind.com www.ravenefd.com 2/13 EFD 1264

Appendix E Photo Log



Well: Shinnery Federal No. 1 (Lea County, NM)



Liner Installation



Post liner installation, looking north.



Post liner installation, looking south.



Post liner installation, looking east.



Post liner installation, looking west.